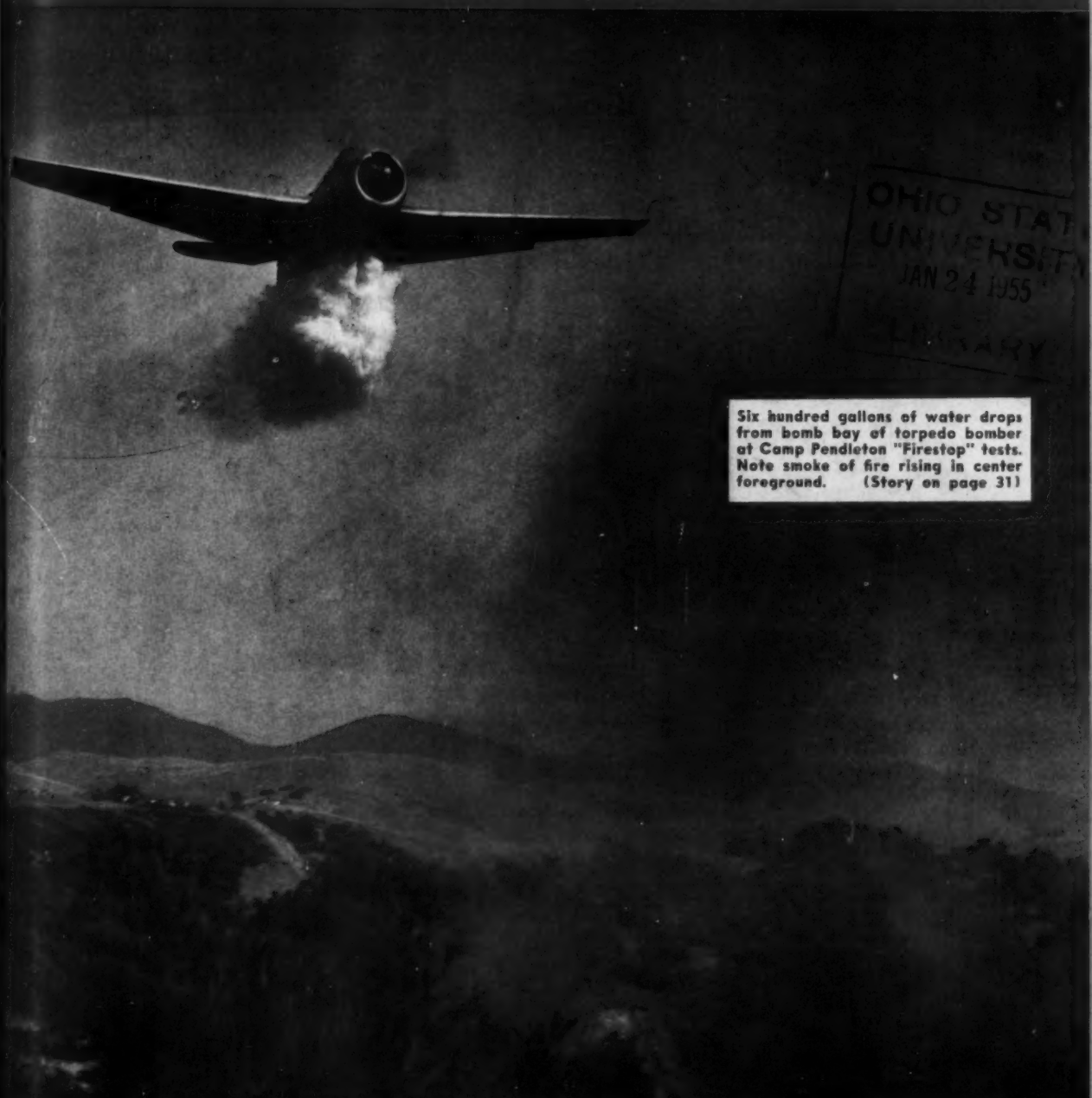
FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

JANUARY, 1955



OHIO STATE UNIVERSITY
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Six hundred gallons of water drops from bomb bay of torpedo bomber at Camp Pendleton "Firestop" tests. Note smoke of fire rising in center foreground. (Story on page 31)

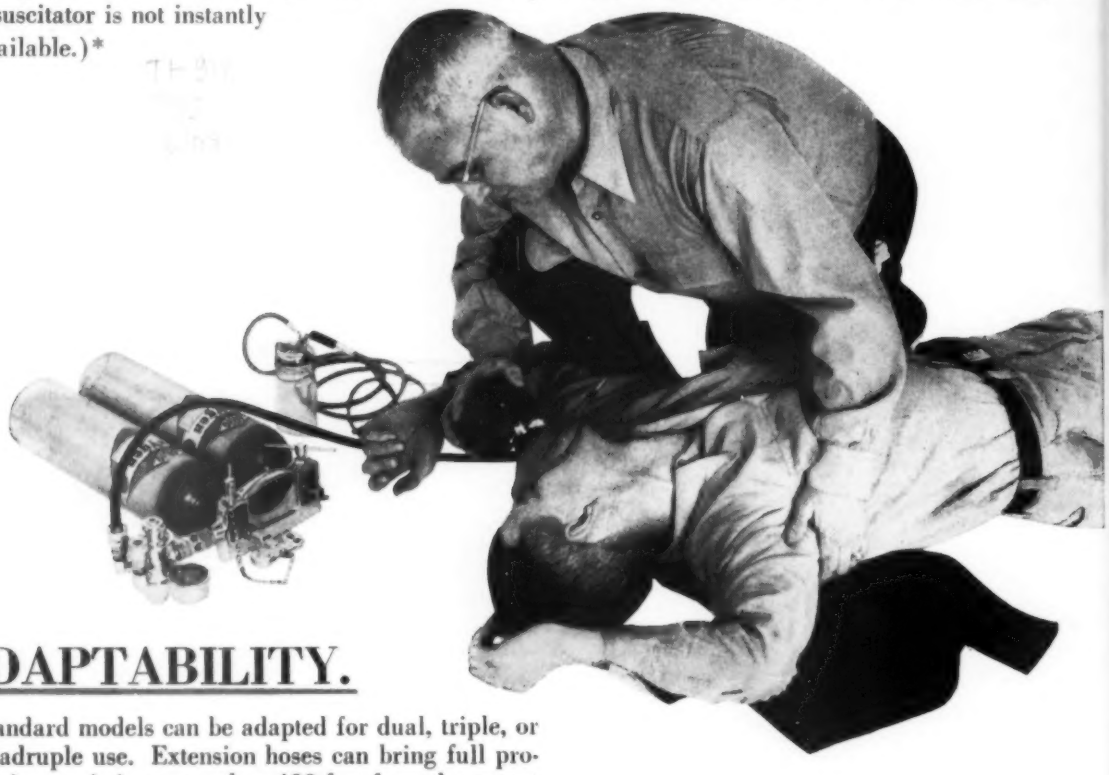
A CASE - SHEPPERD - MANN PUBLICATION

These Advantages Add Up!

SIMPLICITY. In breathing emergencies speed saves lives, and simplicity means speed. Emersons have it.

SAFETY. No instance has ever been recorded of injury from the gentle pressures used. Since approval by the American Medical Association in 1942 thousands of cases have been treated, all safely, including adults, children, and even newborn babies. An important safety factor is the suction phase, which gives vital aid to the circulation by helping the heart to fill normally.*

EFFECTIVENESS. Extensive medical research has found immediate positive-and-negative resuscitation to be the most effective life-saving measure in asphyxial emergencies. (Manual artificial respiration, however, should be used as first aid, if a resuscitator is not instantly available.)*



ADAPTABILITY.

Standard models can be adapted for dual, triple, or quadruple use. Extension hoses can bring full protection to victims more than 400 feet from the parent machine. Manifolds are available for Civil Defense protection.

Write for circular on the newest models.

****Write for free bulletins "Medical Reference on Resuscitation" and "A New Manual Method of Artificial Respiration."***

EMERSON RESUSCITATORS

Can Help You Save Lives

J. H. EMERSON COMPANY

32 COTTAGE PARK AVENUE, CAMBRIDGE 40 MASSACHUSETTS

Clearing the way in winter traffic with a siren only, is like trying to buck through an unplowed road.

FEDERAL'S famous BEACON RAY light is the *year 'round* warning signal!

FEDERAL

also offers all types of *VEHICLE SIRENS* *INDUSTRIAL SIRENS* *Fire Alarm and Air Raid Sirens*

When snow muffles sound, when car windows are tightly shut, only the Beacon Ray can penetrate, can get attention! Don't struggle through any more bad weather without its protection. Don't postpone its purchase — you need it — NOW!

Enthusiastic users will tell you that there isn't *any* warning signal that can beat the Beacon Ray for emergency vehicle use.

Specify the famous Beacon Ray light and the powerful Class Q coaster siren on your new fire trucks. Write us today for descriptive literature.

FEDERAL SIGN and SIGNAL Corporation

Formerly: Federal Enterprises, Inc.

8702 S. STATE STREET, CHICAGO 19, ILLINOIS

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FIRE ENGINEERING

A Consolidation of FIRE AND WATER ENGINEERING, THE FIRE ENGINEER, FIRE PROTECTION *and* FIRE SERVICE

FRED SHEPPERD
Editor

ROI B. WOOLLEY
Assistant Editor

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MEMBER
Audit Bureau of Circulations
Associated Business Publications

A New Year's Toot

AS we enter the New Year we hope we may be permitted a tiny toot on our own horn.

● The accounting for the year 1954 is in. And we have compared it with the records of all those years back to the birth of this Journal—77 years ago. And we have found it very good; in fact *last year was the biggest and best year in* FIRE ENGINEERING'S *history.*

● Best in the amount and quality of editorial content.

● Best in the number of advertisers, and in advertising content.

● Best in the number of new readers—and of even greater importance, in the number of subscriber-renewals; and finally,

● Best in the volume of book and pamphlet business.

● We are very grateful for this record-breaking year. Yet at the same time we are quite conscious that it poses a problem, because it sets a pace that will be hard to maintain, let alone better.

● However, records, they say, are only made to be broken. And we will do our best during 1955 to do just that: To make FIRE ENGINEERING even better and bigger and more valuable to our growing reader-family, and to our advertisers.

● *To all of you who have helped to make this record-breaking possible by your interest and your support, our sincere thanks and the hope that this bright New Year will see the realization of your fondest hopes and expectations.*

The Publishers

FIRE ENGINEERING

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"Specialized Leadership"

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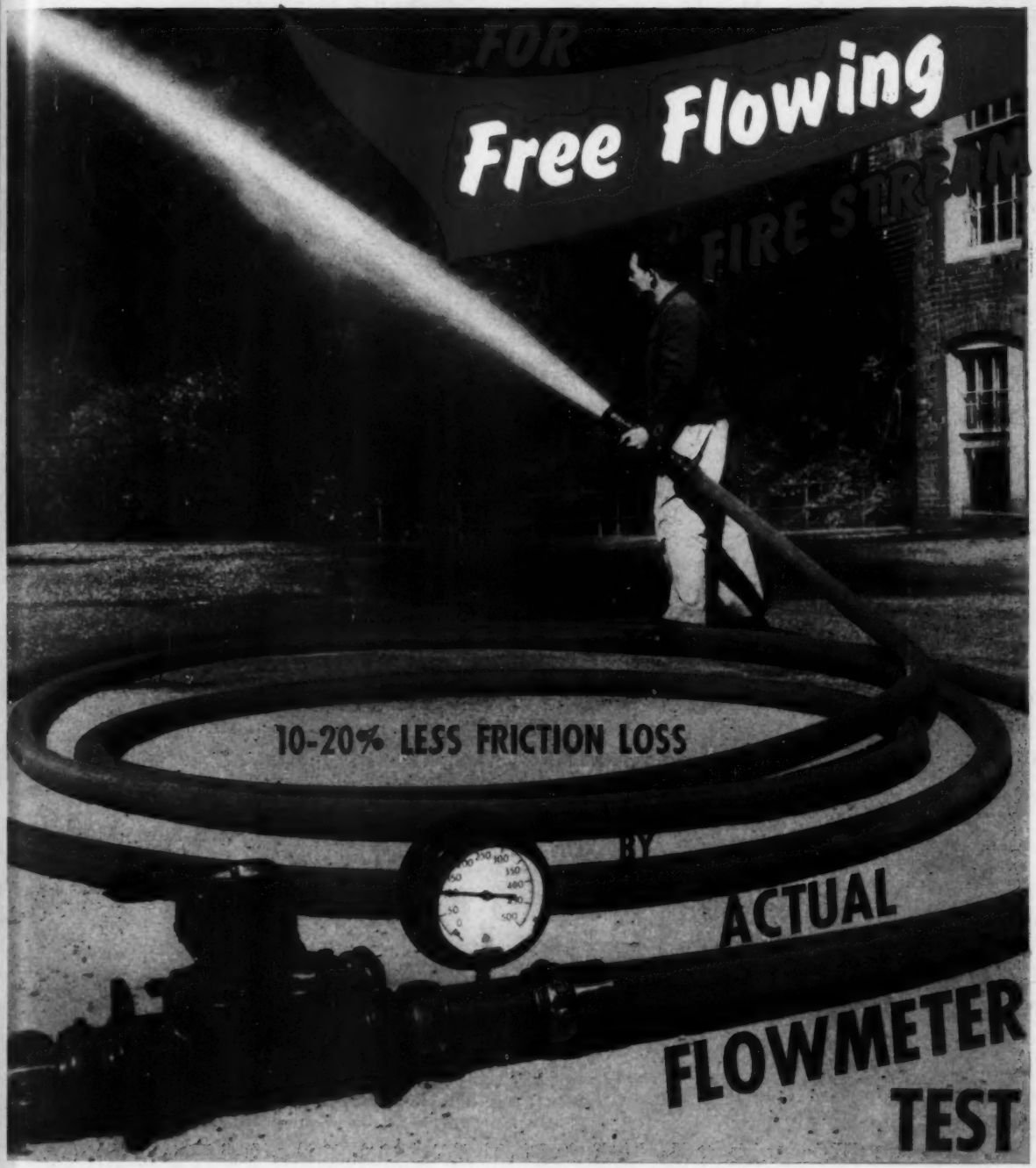

FABRIC FIRE HOSE COMPANY

THE ONLY EXCLUSIVE MANUFACTURER OF FIRE HOSE IN AMERICA

SANDY HOOK CONNECTICUT

IN CANADA BICKLE-SEAGRAVE, LTD. WOODSTOCK, ONTARIO

AMERICAN-LAFRANCE

FIRE EXTINGUISHERS KILL ALL TYPES OF BLAZES

For any blaze which a portable unit can extinguish, American-LaFrance has the right fire extinguisher—expertly designed and ruggedly constructed for long life and efficient service. From the 1-qt. V.L. extinguishers to the 2½-gal. Foamite Model 5F-FD-1, the Carbon Dioxide in all sizes, or the new line of Dry Chemical units, the dependable American-LaFrance line of fire protection equipment meets the most rigorous tests of fire-fighting effectiveness in practical use. For complete information on fire extinguishers, consult your nearest American-LaFrance representative, or write directly to us.

Above: Models 5, 10, 20 and 30 American-LaFrance Dry Chemical Extinguishers: Models 20, 15, 5, 2½ Carbon Dioxide Extinguishers.

Left: 2½ gallon Foamite Fire Department type Fire Extinguisher and the Foamite 500, 3 Package Recharge.

Right: PDC Recharges are available in 5 lb., 25 lb. and 50 lb. moisture proof containers.

AMERICAN-LAFRANCE-FOAMITE Corporation

ELMIRA · NEW YORK · U.S.A.

IN CANADA, LAFRANCE FIRE ENGINE & FOAMITE LTD., TORONTO

RESEARCH KEEPS **B.F.Goodrich** FIRST IN RUBBER

Begin at the end when you buy fire hose

THE weak spot in most fire hose is the coupling area. That's where the hose is twisted when it's connected to the hydrant, where it's bent when the hose is coiled. The coupling and coiling cause tube cracks that eventually give way under water pressure.

In B. F. Goodrich hose this cause of hose failure has been eliminated by adding a layer of hard woven cords to each end of the hose. The extra cords give added protection against twisting and coiling, prevent damage to the tube. As a result not one single length of B. F. Goodrich hose with Plylock end protection has ever failed in the coupling area.

This end protection is one big reason why the Port Huron, Michigan Fire Department (shown above) changed to B. F. Goodrich Fire King. But after using it, Chief George W. Hisscock and his men are just as enthusiastic about Fire King's light weight and flexibility. They find that Fire King gets into action faster and is much easier to handle than the hose they had been using.

B. F. Goodrich Fire King is 18% lighter, much more flexible than other hose because of a chemically-produced fiber. B. F. Goodrich uses this fiber as "filler" cords—the cords that go around the hose and give it strength to take top pressures. Actual service tests prove that Fire King, tested to 600 pounds pressure, is 50% stronger than standard fire hose, which is tested to only 400 pounds pressure.

Before you buy another length of fire hose, let a BFG Fire Hose Distributor show you a sample of Fire King and give you prices. While you may find that the initial cost of Fire King is slightly higher, it's really your most economical buy because it lasts longer. *The B. F. Goodrich Company, Dept. M-359, Akron 18, Ohio.*

B.F.Goodrich
INDUSTRIAL PRODUCTS DIVISION

Get faster performance, more pumping power with the new INTERNATIONAL Royal Red Diamond 501 engine. 212-horsepower, 444 lb-ft torque. Available in three heavy-duty truck models, including the R-206 which meets all Government requirements for civil defense.

International covers the fire truck field

with specialized trucks for every community

The R-166 is a specialist at fighting fires in outlying or rural areas. This medium-duty chassis delivers 300 gallon pumping capacity.

The heavy-duty R-306 chassis easily carries a 1500 gallon per minute pump and a complete outfit of UL-approved fire-fighting equipment.

INTERNATIONAL gives you your choice of 7 different fire truck chassis covering the light, medium, and heavy-duty range.

Every one is a specialist at its job of fighting fires. All are engineered for extra dependability, fast starting and acceleration, time-saving maneuverability, positive braking. Plus that, all are fine examples of the "Tough-Job" engineering INTERNATIONAL is famous for. Power steering is available on all models. Pumping capacities range from 300 to 1500 gallons per minute.

Three of the heavy-duty models offer the new 212-hp INTERNATIONAL Royal Red Diamond 501 engine as optional equipment. This new, more powerful engine provides a new, greater measure of the reserve power so vital for service.

Whatever your fire-fighting requirements, INTERNATIONAL has the truck best suited to your job. Your INTERNATIONAL Branch or Dealer can prove it to you right now . . . just give him a ring.

INTERNATIONAL HARVESTER COMPANY • CHICAGO

International Harvester Builds **McCORMICK®** Farm Equipment and **FARMALL®** Tractors...Motor Trucks...Industrial Power...Refrigerators and Freezers

See the season's new TV hit, "The Halls of Ivy," with Ronald Colman and Benita Hume, Tuesdays, CBS-TV, 8:30 p.m., EST

INTERNATIONAL TRUCKS

"Standard of the Highway"

THE NEW M·S·A AIR-MASK

. . available with AIR or OXYGEN

Improved design, and the selective use of materials to fully meet service conditions put the new M.S.A. Air-Mask in a class by itself.

This unit, designed to bring maximum protection and comfort to users in unbreathable atmospheres, supplies air or oxygen in exact accordance with breathing needs. During exhalation, the flow ceases—an economy measure that greatly lengthens service life.

Here are a few of the construction details—

...a small attractive demand regulator.

...large, easy-operating, all metal handwheels—longer wear.

...large, well-defined figures on pressure gauge for easy reading.

...the high pressure hose is made of wire-inserted neoprene for increased wear.

...the redesigned cylinder valve connects directly to the cylinder and the improved working parts of the valve provide greater serviceability and less maintenance.

...the compact cylinder frame fits close to the body.

...the nylon harness is easily adjusted and provides maximum strength. It is highly chemical and water-resistant.

...the new color scheme is an attractive dark green and yellow. This striking appearance makes it easier to spot men in working areas.

Write today for complete details on this new M.S.A. Air-Mask . . . you'll be taking a step forward in bringing greater efficiency, safety to your fire-fighting operations.

SAFETY EQUIPMENT HEADQUARTERS

Call the M.S.A. man on your every safety problem . . . his job is to help you

MINE SAFETY APPLIANCES COMPANY

201 North Braddock Avenue, Pittsburgh 8, Pa.

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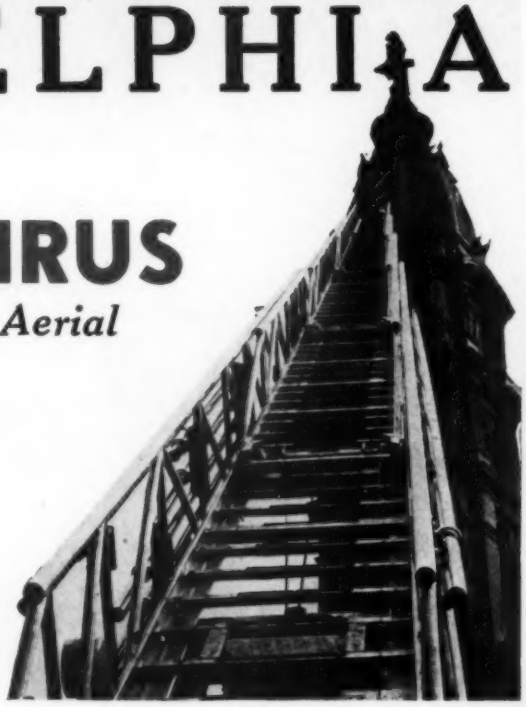
MAXIM-MAGIRUS

World's Largest and Finest Aerial



Congratulations

to Deputy Fire Commissioner Hink and the city of Philadelphia on the selection of Maxim-Magirus Aerial—the world's greatest rescue ladder.

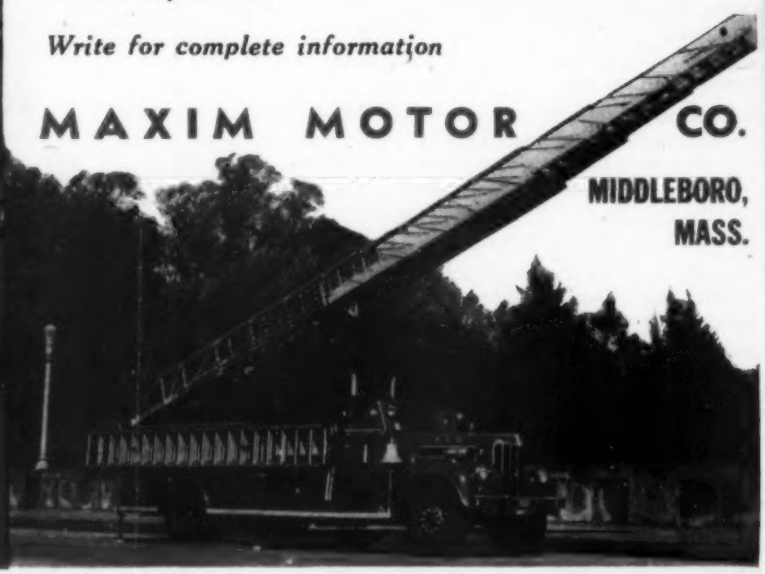
HERE in one of the largest and most progressive fire departments, is the last word in fine rescue ladders—a 100 foot, entirely automatic ladder with every safety provision, absolutely fool-proof, and superbly engineered and built.

If you are considering a big ladder, we want you to see and operate the Maxim-Magirus. There just isn't anything like it. One hundred feet—larger if you wish. By all means—see the Maxim-Magirus before you select any aerial.

Write for complete information

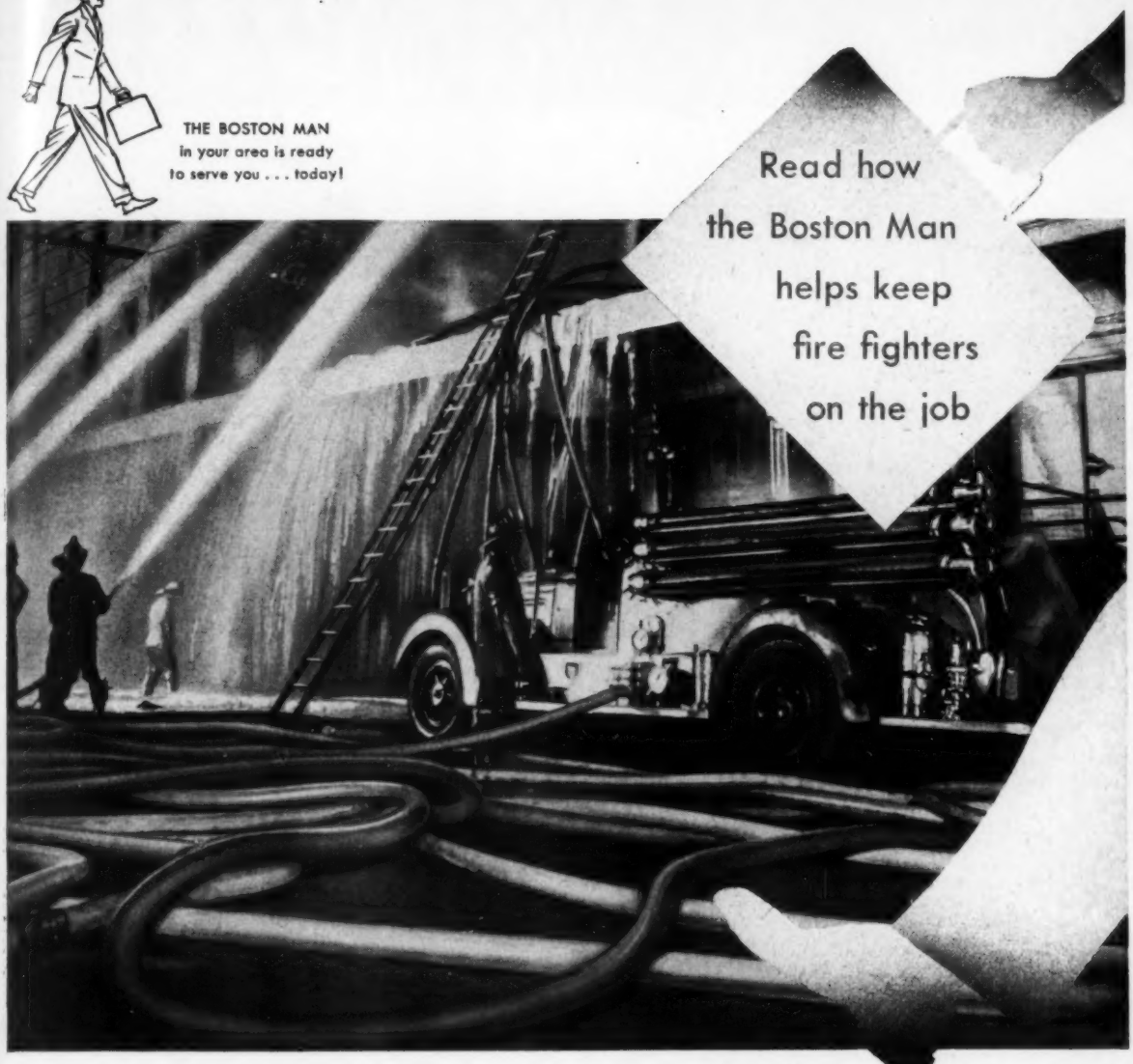
MAXIM MOTOR CO.

MIDDLEBORO, MASS.



Photos Courtesy of Philadelphia Fire Dept.

THE BOSTON MAN
in your area is ready
to serve you . . . today!



Suppose this hose should fail *now!*

An investment of up to $55,000 in a modern piece of mobile fire-fighting equipment could, in a sense, "go down the drain" if a fire hose should burst at the crucial moment when it is needed most. The entire investment, at that moment, would be a waste.

No fire-fighting team can afford that risk . . . which explains why BOSTON hose and fittings have been a standard with so many companies over so many years. Not only was BOSTON the originator of the circular weave which made high-pressure fire-hose possible—BOSTON has also maintained the lead in developing still higher-strength hose with the use of modern synthetic fibers.

Municipal fire hose, chemical and booster hose, suction hose, fittings and nozzles . . . if they bear the name "BOSTON" they are BEST on your team.

BOSTON

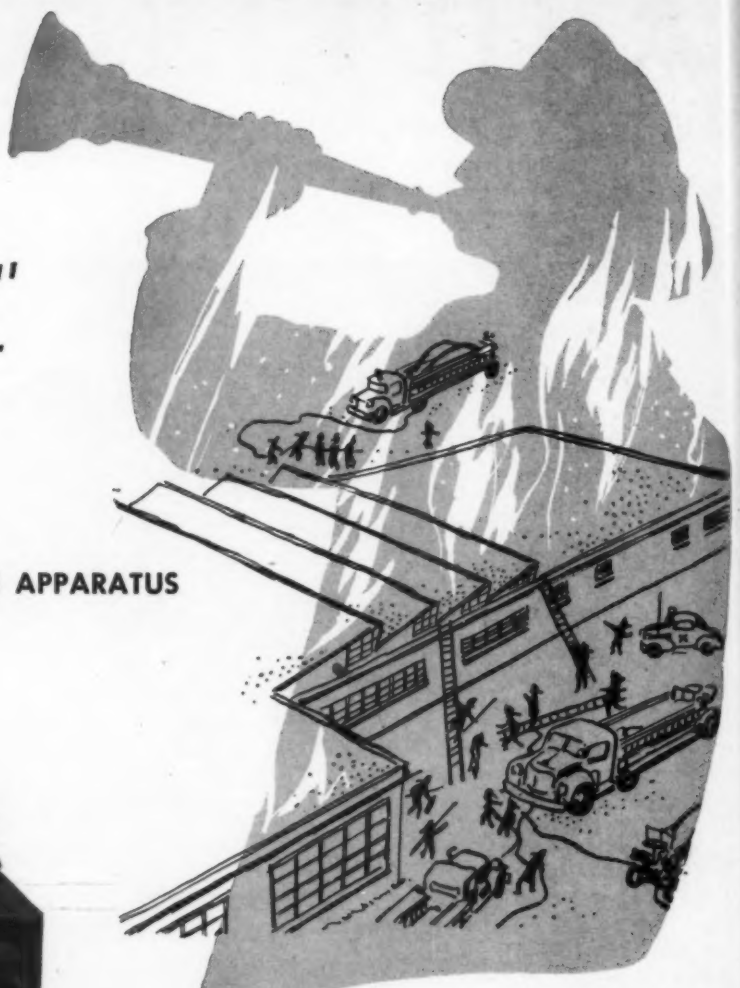
Call our distributor in your area. He is your Boston Man.

BOSTON WOVEN HOSE & RUBBER CO., Box 1071, Boston 3, Mass.

Industrial Hose • Fire Hose • Belting • V-Belts • Packing • Tubing • Garden Hose • Tape • Matting and Stair Treads

THE NEW

"BIG VOICE"



CUSTOM DESIGNED FOR FIRE APPARATUS

with weatherproof swivel mount speaker
with audio booster amplifier
with custom installation at low cost
plus complete selection of optional accessories.

PLEASE HURRY COMPLETE DETAILS OF TRIAL OFFER.

NAME:_____

TITLE:_____

ADDRESS:_____

CITY:_____ STATE:_____

FE

Now your mobile equipment can have a *louder* voice on the fire scene with Motorola's new Fire Radio unit with 10 times greater speaker power than conventional 2-way units.

This increased loud speaker power overcomes the high noise levels of engines, bells, sirens, and general traffic—and messages come through with maximum intelligibility. Even the most powerful pumpers can't drown it out. Top Motorola radio performance and reliability, under strenuous Fire department conditions is assured.

— but hearing is believing, and to let you hear with your own ears what this ruggedized, easy-to-install, low cost fire radio will do, Motorola has arranged for a 30-day trial in your car or on your apparatus.

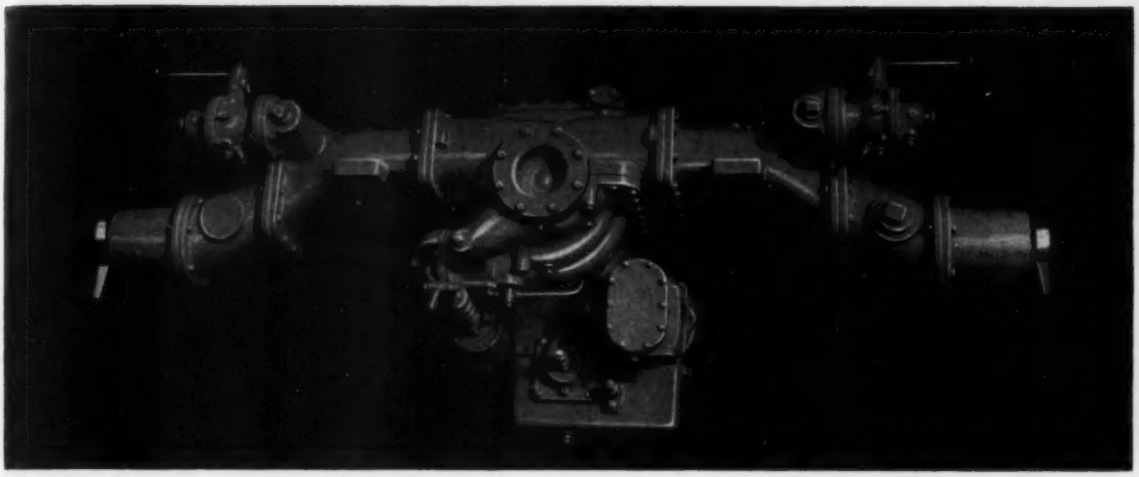
Simply sign and mail the coupon and your Motorola radio communications engineer will call to arrange the details.

Motorola 2-WAY FIRE RADIO

Motorola Communications & Electronics, Inc., 4501 Augusta Boulevard, Chicago 51, Illinois

The World's Largest Manufacturer of Mobile 2-Way Radio

Completely Modern
HALE QL and QL75 TWO STAGE FIRE PUMPS



UNDERWRITERS' RATING:	B Ratings	A Ratings
• QL and QLHD	500 GPM at 120 lbs.	500 GPM at 150 lbs.
• QL and QLHD	600 GPM at 120 lbs.	600 GPM at 150 lbs.
• QL75 and QL75HD	750 GPM at 120 lbs.	750 GPM at 150 lbs.

PLUS FEATURES:

LOW OVER-ALL HEIGHT—The low over-all height of the pump above the frame provides substantially more room for tank, compartments, or hose space.

VOLUME-PRESSURE PUSH-BUTTON CONTROL—Push-Button on panel enables operator to change over from pressure to volume or vice versa, carrying instrument panel operation one step further for simplicity of control.

PANEL MOUNTED RELIEF VALVE CONTROL—A convenient wheel on panel makes it easy to set relief valve quickly and accurately. (Relief Valve is built into pump—another new feature.)

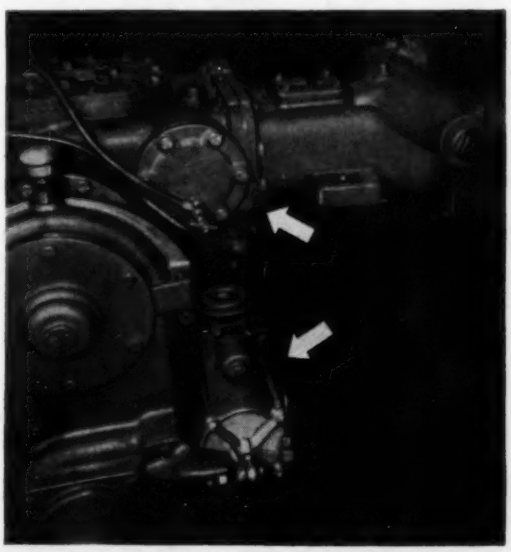
DEEP DROP TO FIT MODERN CHASSIS—The QL and QL75 Series is designed with a Deep Drop between mounting pads and center line of drive shaft to fit up-to-date truck chassis—an important aid in engineering the pump into the chassis.

EASIER TO SERVICE—The new design makes it convenient to service pump from the bottom for inspection—or minor repairs. Lower half of pump, or whole pump can be dropped down between frame without marring enclosure panels or disturbing gauges or instruments.

PUSH-BUTTON PRIMING—This feature, so popular on previous models, has also been incorporated in the QL and QL75 series.

BUILT-IN SPEED COUNTER—Provides convenient way to measure propeller shaft speeds.

Below—Close-up view of built-in Relief Valve at top center and Pressure-Volume Control Cylinder at bottom center.



Write for Bulletin #334 on The NEW HALE QL and QL75 Series of Centrifugal Pumps. HALE Pumps are Built in all Standard Capacities

HALE FIRE PUMP CO.
CONSHOHOCKEN, PA.

ALL TYPES...ANY CLASS FIRE!

Since different fire hazards require different types of fire extinguishers, PYRENE—C-O-TWO manufactures all types . . . the finest and most complete line on the market today.

When doing business with PYRENE—C-O-TWO, you receive unbiased advice on what is best for your particular fire hazards, whether class A, B or C. Also, there is a well-rounded sales engineering organization having nation-wide representation to render top quality service wherever you're located.

Don't take unnecessary chances . . . the extensive fire protection experience of PYRENE—C-O-TWO over the years is at your disposal without obligation. Get complete facts now!

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Sales and Service in the Principal Cities of United States and Canada

COMPLETE FIRE PROTECTION

portable fire extinguishers . . . built-in fire detecting and fire extinguishing systems

CARBON DIOXIDE • DRY CHEMICAL • VAPORIZING LIQUID • SODA-ACID • WATER • CHEMICAL FOAM • AIR FOAM

WARD LaFRANCE

FIRE BALL Special

Meet the latest addition to the Ward LaFrance line of fine fire-fighting equipment!

It's the Fire Ball Special . . . a big city pumper, priced within small community and rural area budgets.

This completely new 500 G.P.M. pumper is powered by the new Chrysler Fire Power 183 H.P. engine . . . offers truly outstanding fire-fighting performance. The entire unit, body and chassis, is specially engineered and built by Ward LaFrance craftsmen to the same high standards of Ward LaFrance quality.

Regardless of the size of your fire department, you'll want to talk to the Ward LaFrance representative in your area. He'll show you how the Fire Ball Special can provide the kind of protection your community needs.

WARD LaFRANCE
TRUCK CORPORATION
Fire Apparatus Manufacturers for over 35 Years.

GENERAL OFFICE & FACTORY: Grand Central Avenue, Elmira, N.Y. Tel. 3-5631

DIRECT FACTORY BRANCH: 139th Street & Bruckner Blvd., New York 54, N.Y. Tel. CYpress 2-3300

EXPORT: Ward LaFrance International, Inc. Elmira, N.Y., U.S.A. Cable Address: "WARDTRUCK"

ANOTHER JOB...
ICE-BREAKING

Midget ice breaker of the Pacific Gas and Electric Company on California's Eldorado Canal. Powered by a Johnson Sea-Horse 10.

Probably the smallest ice breaker ever built! But with a 2-man crew it does the work that formerly took 20 men. Its job is to keep ice from choking canals and cutting off the water supply to hydro-electric powerhouses.

Just another example of Johnson versatility. There's no limit to the work these DEPENDable motors perform. They'll take your boat through shallow and obstructed waters—they'll push and pull tremendous loads—and they'll go like the blazes!

Besides, they are economical to buy, operate, service and repair. You can transfer them from boat to boat in a jiffy. And they save valuable space in your boat for cargo and personnel.

NEW QUIET
SEA-HORSE 10

Johnson
SEA-HORSES
FOR **DEPEND**ABILITY

See your Johnson Dealer. Ask him about the 5 great models for 1955. Look for his name under "Outboard Motors" in your classified telephone directory.

1955 Sea-Horses

SEA-HORSE 25 Electric Starting	25 hp	$525.00*
SEA-HORSE 25	25 hp	430.00*
SEA-HORSE 10	10 hp	310.00*
SEA-HORSE 5½	5½ hp	210.00*
SEA-HORSE 3	3 hp	145.00

*Includes Mile-Master Fuel System.

FREE! Send for big new Sea-Horse catalog. All 1955 models fully described and illustrated. Complete specifications. It's yours for the asking. Send a post card to...

JOHNSON MOTORS, 7000 Pershing Road, Waukegan, Illinois
A DIVISION OF OUTBOARD, MARINE & MANUFACTURING COMPANY
In Canada: Manufactured by Johnson Motors, Peterborough

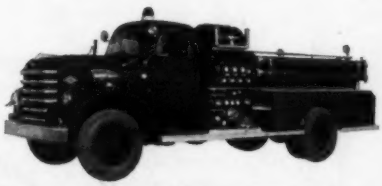
Prices f.o.b. factory, subject to change. OBC certified brake hp at 4000 rpm.

NEW JOHN BEAN High-Pressure Sno-Foam blankets a fire at 70 feet

Note (above) the heavy adhesive fire smothering blanket of Sno-Foam laid down and (below) the extensive area covered by the firemen applying another John Bean fire fighting first — High-Pressure Sno-Foam.

Now, the original John Bean high-pressure fog fire fighter, with the built-in Sno-Foam system, offers all the advantages of high-pressure fog plus a blizzard of foam that knocks out the hottest fires faster than ever before possible. Your firemen are safe from the heat of raging chemical, paint, gasoline or petroleum fires as a smothering blanket of completely aerated foam can be laid down from distances of 70 feet or more. Sno-Foam can be applied quickly and easily. Aerator adapters slip on the high-pressure fog guns and a turn of a valve delivers Sno-Foam in seconds. Up to 5,000 gallons of foam can be applied from the water and solution carried on a standard truck. A dependable foam metering valve assures correct consistency, using either high or low expansion foam. More than ever before, John Bean apparatus is the fireman's fire fighter.

NOW AVAILABLE



John BEAN (1) HIGH PRESSURE FOG plus (2) VOLUME plus (3) "sno-foam" — all 3 in a single John Bean Fire Fighter.

Write today for complete details on this triple combination of proven fire fighting weapons.

JOHN fmc BEAN

ORIGINAL HIGH-PRESSURE FOG FIRE-FIGHTER

John Bean Division, Dept. 126, Lansing 4, Michigan
John Bean Division, P. O. Box 145, San Jose, California

Can be mounted on most standard truck chassis.

Helping HANDS

The hose or pump lever can be dropped at any time permitting free use of both hands to assist others or to work with tools, shovel, rake or broom.

The water will not syphon out of the DRAGON and there is no loss of pressure. The DRAGON is back in action the moment the nozzle shut-off is opened.

DRAGON FIRE PUMPS meet the requirements of the Underwriters' Laboratories, Inc., and can be supplied with their label of inspection attached.

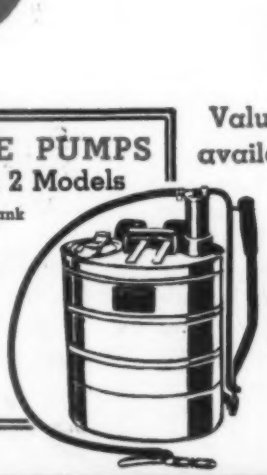
DRAGON FIRE PUMPS
Now Available in 2 Models

No. 150-S—Stainless Steel Tank

No. 150-G—Galvanized Tank (Cold Rolled Steel-Hot Dipped Galvanized after Fabrication)

All units equipped w/ brass pumps, all Tanks are seam welded

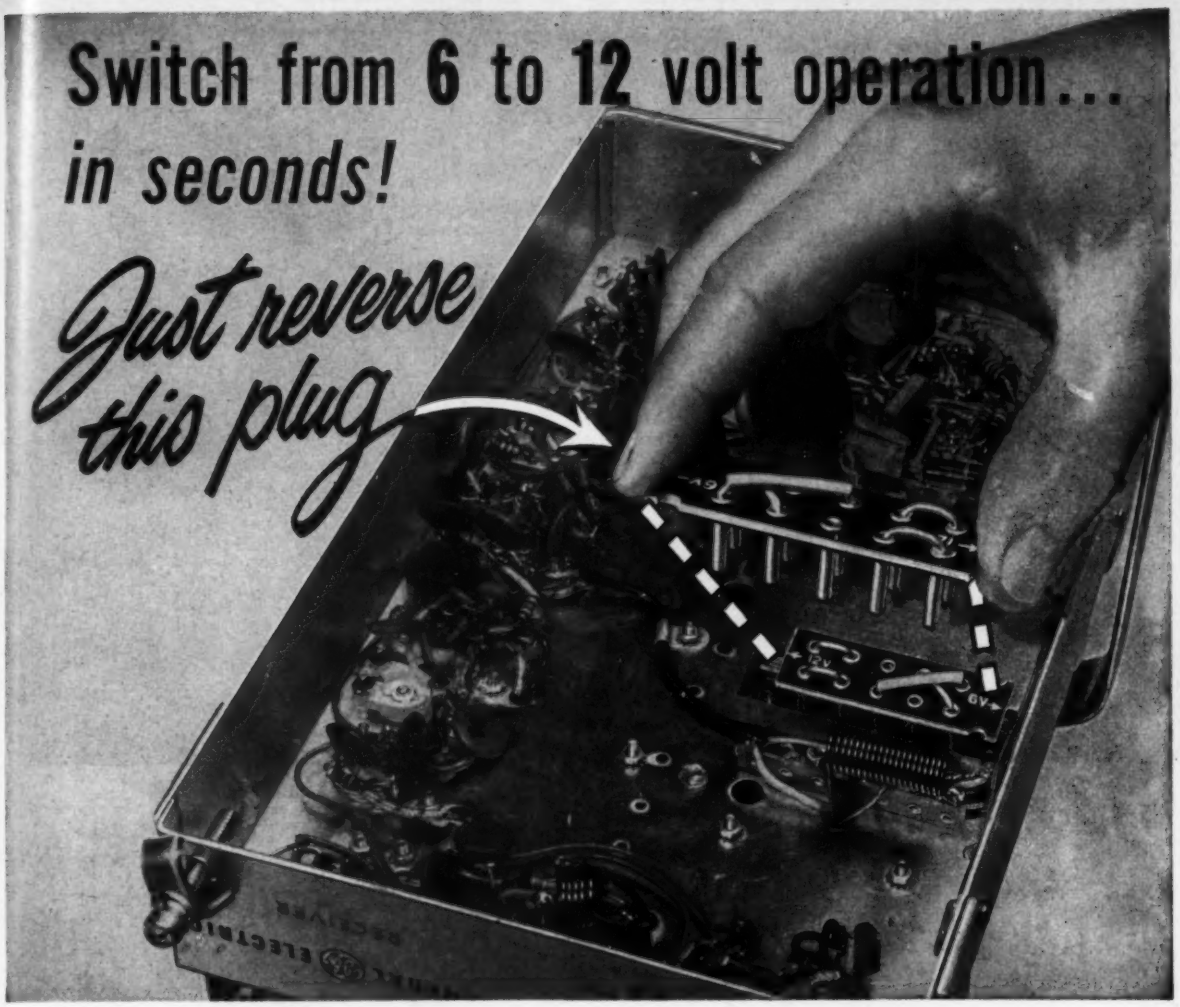
Capacity of Tank—5 Gallons



Valuable Distributorships available, write for details

PARCO PRODUCTS COMPANY

PENNSBURG, PA.



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Little more effort is required to change over than it takes to *twist your wrist.* General Electric's *built-in flexibility* takes care of your future needs today!

This simplified conversion formula is exactly the same for any one of four G-E 2-way radio systems. Be sure to keep this in mind when you make a decision to buy communications equipment. With General Electric you will benefit from obsolescence-proof design and gain superior efficiency of mobile radio equipment.

THE UNIQUE 6/12 FEATURE IS BUILT-INTO THESE G-E 2-WAY RADIO SYSTEMS:

MC-2	15-watt	25-50 MC
MC-4	30-watt	25-50 MC
LP-6/12	3-watt	25-50 MC
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Ohio Fire Dept. reports:

Stronger, more flexible hose made with Dacron* is easier to use all along the line

Light, flexible hose made with "Dacron" coils readily, is easy to carry.

"From hydrant to pumper to fire . . . we've found that hose made with 'Dacron' is easier to handle when every second counts," reports Chief Walter L. Hydaker of the Lima, Ohio, Fire Department. "Its lightness and flexibility simplify operations at the scene of the fire, and afterwards it's easier to rack, dries faster, and stows on the truck with less effort."

The load-carrying "filling" cord that reinforces the hose is Du Pont "Dacron" polyester fiber. It's exceptionally strong, yet light and flexible . . . results in a hose with more strength, but less bulk and weight than ordinary hose of the same inside diameter. And, the great water resistance of "Dacron" helps protect against mildew . . . means extra-long life for hose.

More than two years of field testing have proved the superiority of this new hose in action. Du Pont makes only the "Dacron" fiber . . . does not manufacture hose. Fire hose made with "Dacron" is produced by a number of leading fire-hose manufacturers. Order it from your supplier next time you need hose. E. I. du Pont de Nemours & Co. (Inc.), Textile Fibers Department, Wilmington 98, Delaware.

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Yes . . . BOARDMAN-Built fire fighters are engineered and constructed for complete and long-lasting dependability, even in the toughest emergencies. There's a model for your department, whether urban or rural. The mobile rural tanker above fights running grass fires with the truck in motion, in addition to routine blazes. The famous Waterous pump amidship delivers 200 GPM at 150 lbs. pressure from draft. Like the rugged BOARDMAN-Built pumpers, it is available on any commercial chassis for maximum economy.

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Write TODAY for details and specifications on BOARDMAN-Built fire fighters to meet your needs.

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The Original

STRIPED SAFETY COAT

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The striped safety coat for firemen is an *original* MIDWESTERN development . . . featuring highly visible yellow stripes which are *rubberized as part of the material* . . . not painted, glued or sewed on!

Service records prove that Midwestern Striped Safety Coats withstand years of rugged duty . . . offer high safety visibility during the entire life of the garment. Designed exclusively for firemen . . . every detail in construction adds to the service, comfort, protection and long wear of the garment.

As an accident prevention measure, more and more fire departments are specifying Midwestern Striped Safety Coats as standard equipment. There are many imitations but *no substitute* for the workmanship, built-in comfort and longer wear you receive by specifying MIDWESTERN.

MIDWESTERN COMBINATION SAFETY SUIT

The Midwestern Safety Coat and Bunker Pants combination is preferred by many larger municipal departments. Detachable wool linings. Close fitting collar and elastic inner sleeve on coat keep out sparks and water. Pants have double-stitched seams, reinforcing rivets at points of strain, large, roomy pocket space.

QUALITY UNEXCELLED

In our vast selection of materials you will find the type of fabric exactly suited to your climate and needs. For complete information, have your Midwestern dealer show you our complete line. A letter to the factory will also bring you literature and material samples for your inspection.

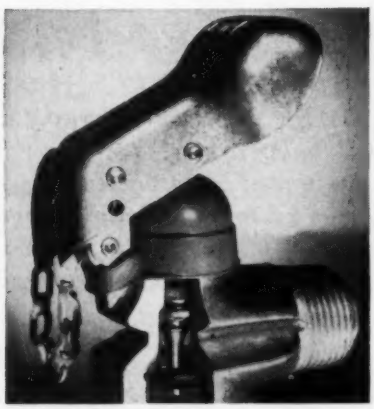
MIDWESTERN SAFETY MFG. CO. Mackinaw, Illinois

Manufacturers of the Famous MACKINAW Safety Coats

Here's why Ansul extinguishers give you faster, more dependable fire protection!

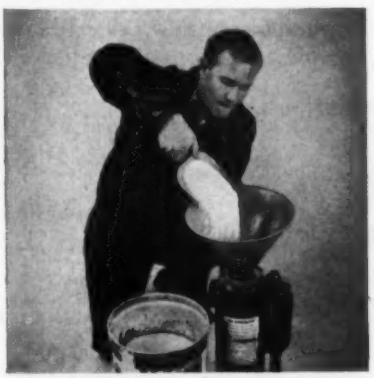
READY for instant action under the most severe exposure conditions,

WEATHER-TIGHT NOZZLES made of aluminum and stainless steel, can't rust. Neoprene cap and oil-impregnated washers keep out moisture.



PUNCTURE PIN. In this aluminum housing a stainless steel pin pierces the gas cylinder that supplies the propellent power for the dry chemical.

PATENTED NOZZLES. Straight or fan stream, the hazard determines which is installed. An Ansul exclusive for more effective fire control.



FIELD RECHARGING. Just 4 minutes after a fire is extinguished your Ansul unit can be recharged, ready for action. No special tools are needed.

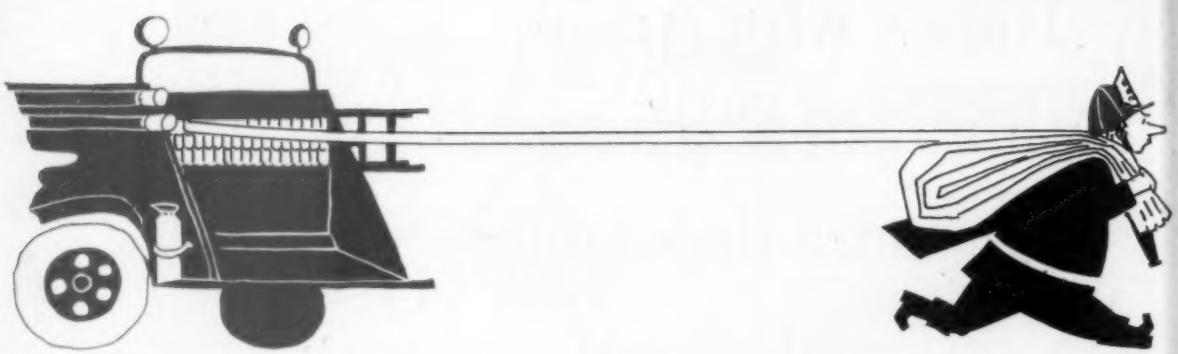
The pictures on this page tell half a story. The complete story includes Ansul's facilities for training your personnel in the science of fire control and prevention. Experience has taught us that *complete* fire protection demands *both*—fast, dependable equipment and trained personnel to man that equipment. Ansul can provide both. Get in touch with your local Ansul man, he has the complete story about *complete* fire protection.

Call the ANSUL MAN!

Get in touch with your local Ansul man through the "yellow pages," or write direct to ANSUL CHEMICAL COMPANY, Fire Equipment Division, Dept. F-11, Marinette, Wisconsin.

Write Ansul for your copy of New Fire Equipment Catalog.

ANSUL



Get to the fire faster -with more hose!

AMERICAN cotton-synthetic jacket hose weighs 18% less, is 27% less bulky and 50% stronger than old-style cotton jacket hose. It has been proved by three years of field service. Why lose time with bulky, hard-to-handle, hose when you can get benefits like these:

CARRY 25% MORE HOSE in the same truck space.

EASIER HANDLING... stays flexible wet or dry, lies flatter, coils better.

UP TO 50% STRONGER... 400 or 600-lb. test.

LONG LIVED—costs you less per foot per year because it lasts longer (much AMERICAN municipal fire hose has been in regular use 25 and 30 years.)

Available in heavy duty, medium weight and light weight jackets, each identified with its woven-in stripe. Every length proof tested with couplings on; test report accompanies shipment. Can be Arcolized to prevent mildew and rot. Order from your dealer or write us now for details.

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One Hand Operation! Easy-to-handle Rockwood WaterFOG nozzle is made of aluminum alloy, weighs only 5 pounds, 5 ounces. Nozzle design reduces reaction to a minimum.

Boy puts out raging fire

The fuel oil test fire above was extinguished in a matter of seconds by a 12-year-old boy — thanks to remarkable Rockwood firefighting equipment.

By using a lightweight, 10-foot applicator, he was able to approach the fire safely as low velocity Rockwood WaterFOG was discharged through the applicator, quenching flames, choking off oxygen and cooling the surrounding area thus preventing "flash back."

Rockwood WaterFOG is the result of discharging water through a specially engineered Rockwood nozzle that breaks water into tiny particles which burst into a blanketing mist of steam that smothers fire. The Nozzle shown in use here is a 1½" Type SG 48. It can also discharge high velocity WaterFOG, and straight water stream. Available for ¾", 1", 1½" and 2½" fire hose sizes.

Plan to make this and other Rockwood firefighting aids part of your team.

ROCKWOOD SPRINKLER COMPANY

Engineers Water . . . to Cut Fire Losses

Rockwood Double Strength Foam Liquid, 3 parts mixed with 97 parts water, forms a quickly re-sealing, solid FOAM blanket or a highly heat absorbent FogFOAM pattern — depending on the Rockwood equipment used to discharge it. Available in 5-gallon cans or 50-gallon drums.

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Please send me your illustrated booklet on Rockwood fire-fighting products.

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Company.....

Street..... City.....

Zone..... State.....

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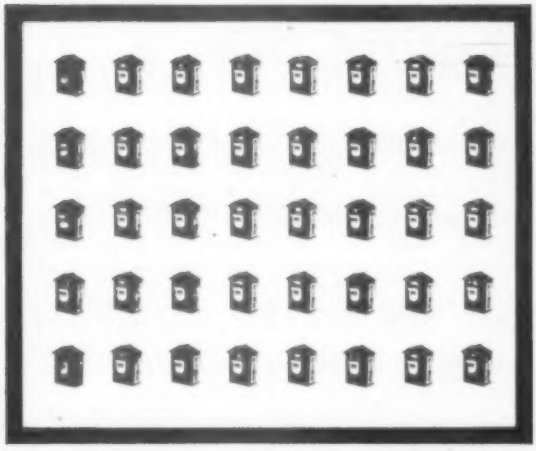
Gamewell Form 4 Unit Gives More Protection per Dollar

At lower cost, but of standard Gamewell high quality, the new Form 4 Control Unit stretches your fire alarm dollar. It enables you to put saved dollars into street boxes to insure wider public use. Compared with earlier models — dollar for dollar — you can buy the new Form 4 and up to 8 times as many boxes for the same overall cost!

5 street boxes with previous control systems

compared with up to 40 boxes with the new Form 4



The new Gamewell Form 4 is ideal for the small community, and for decentralizing big city Fire Alarm Systems.

Floor Space Problem Solved

In only 20% to 30% of the space previously used, you can install this system, including batteries. This "packaged" Fire Alarm Control Cabinet is *complete*, contains all devices needed for a central office setup.

The Gamewell Form 4 is quickly and easily installed, has reserve power for emergencies, is available in any capacity up to 10 circuits.

The Form 4 automatically repeats box alarms and warns if a circuit is broken. Delivery of the unit, which meets NBFU standards, can be made promptly.

Descriptive Bulletin Now Available

Bulletin 3A completely describes the Gamewell Form 4 Control Cabinet and its outstanding features. At no obligation, write today for a copy of Gamewell Bulletin 3A.

THE GAMEWELL COMPANY

Newton Upper Falls 64 • Massachusetts

FIRE ENGINEERING

JANUARY, 1955 VOL. 108, NO. 1

With the Editor

Whose Child—Rescue? What many believe to be a revolutionary step is being taken by the New York Fire Department.

That is to absorb the N. Y. Police Emergency Service, which has been a Police function since 1930, and thereby assume responsibility for all rescue emergency service in the big city.

The decision has long been under consideration but it remained for Fire Commissioner Edward F. Cavanagh, Jr., to work out the details with Mayor Robert Wagner and Police Commissioner Adams, and to get action.

We are not as yet familiar with all those details except to note that some 13 emergency vehicles will be shifted from Police to Fire Stations and the Police will retain the four ponderous, emergency vans, which were originally a part of the Emergency Service set up by the then Commissioner Grover Whalen in 1928. These, we're told, will be used to transport Police Reserves when needed.

Thus the fire service takes over the task of responding to all public calls for aid, from getting cats out of trees to handling would-be suicides, most of which activities were formerly considered police work.

Just how Commissioner Cavanagh will house, man and operate what some Police officials formerly dubbed a "white elephant," is presently known only to the Commissioner. Report has it that the units will be adjuncts to the city's five Fire Department Rescue units now in service, one in each Borough. It is expected that the emergency vehicles may also be operated as department squad cars to speed needed personnel to particularly hazardous areas where fire crews are considered insufficient for fast, coordinated attack and rescue operations. Some years ago the Fire Department experimented with the operation of a number of these squad cars to augment responding fire crews, but the idea was later dropped.

The degree and extent to which the Fire Service should perform rescue work has been a moot question. The very meaning of the term "rescue work" has never been clearly defined within the Fire Service and in civil defense circles. In general, however, as our readers have no doubt learned from the Round Table discussions and analytical studies published in this Journal, regardless of just what is meant by "rescue," or by "emergency operations," the majority of experienced fire fighters believe this to be a true function of the Fire Service. They point out that both as regards equipment, mechanical facilities, and personal know-how as well as being always "on-tap"—the Fire Service is the logical agency for such undertakings.

It has long been our conviction that while this is true, the vast majority of fire departments are lacking in emergency and rescue facilities necessary to conduct such operations with efficiency and dispatch. It is true that every fire company, ladder units particularly, should be able to perform emergency rescue service. But very few cities have sufficiently large crews today to attempt to do this work where they may have to cope at the same time with fire or other kindred emergencies. And in a large percentage of fires, rescue units are required to aid *fire fighters* as well as the public. And few cities have sufficient such facilities to handle both public and fire service needs, such as may eventuate at any serious fire that poses threat to life and property.

The question of what constitutes emergency rescue service, and who should assume its functions has been further beclouded by civil defense authorities. Just where "light rescue" ends and "heavy rescue" begins in civil defense is still anybody's guess. Meanwhile, one thing is certain: until sufficient target areas have readily available mechanical and manpower facilities for rescue, the bee will probably be pinned on the Fire Service.

Commissioner Cavanagh's experiment, meanwhile, will be watched with much interest.

Fred Shepard

New York Finds Inspections By Fire Companies Effective

Each Unit Includes Four Men; Radio Maintains Contact; Company Remains on Call for Fire Fighting Duty.

WHEN short-wave, two-way radio was introduced into the fire service, few chief officers had any realization of the scope of its usefulness in not only combating fire, but in preventing it.

Today, fire service radio is a definite entity, firmly established in large and small fire departments from coast to coast. Nevertheless it is far from being used to its fullest extent.

That is particularly true in the field of fire prevention. Many departments which boast 100 per cent radio installations are today overlooking the vast opportunity their radio holds forth to them to "fight fires before they happen," in short, to *prevent* fires, by utilizing their radio to step up their inspections and to familiarize fire fighting personnel with fire hazards in their areas.

Until only a few months ago the city of New York was in this same boat. It took many years to convince the powers-that-be of the wisdom of equipping all its fire vehicles with short wave radio as a means of improving fire suppression in the field. That job has just been done.

In November, 1954, Mayor Robert F. Wagner and Fire Commissioner Edward F. Cavanagh, Jr., went into a huddle over the disturbing growth in the city's fire losses, which had more than doubled in the last decade. But what

Edward F. Cavanagh

disturbed them even more than rising property losses were the facts that in excess of two persons a week were losing their lives in fires in New York City every week, and that on an average of every six weeks, year-in-year-out, a member of the department lost his life in the grim business of protecting the people of the city against deadly fires.

These losses, it was disclosed, were occurring, notwithstanding the continuing improvements being made in the Department's fire suppression facilities, including installation of short-wave radio on every one of its hundreds of pieces of fire apparatus, in addition to modern breathing apparatus; replacement of out-moded apparatus with new, modern vehicles, as rapidly as possible, and other facilities. They were occurring, also, in the face of the fact that literally thousands of old tenements and other buildings throughout the city had been torn down, or boarded up. In short, with what might be said to be fewer structural fire hazards in the areas wherein the most serious and fatal fires were running up ill-fated records, fire fighters were finding it increasingly difficult to prevent fires, and to check those that did occur and, without injury to tenants or to fire fighters themselves.

At that time, the Mayor-elect and his new Fire Commissioner agreed upon policy of fire prevention, which both hoped would be carried out not merely during Fire Prevention Week, but throughout the year. Only by the application of every possible means and methods of *forestalling* fire, they reasoned, could the appalling losses of 1954 (137 lives, and property valued at over

N.Y.F.D. Photo by Hellriegel

Just one of the many reasons why New York City has gone in for squad field inspections in a big way to prevent fires. Every residential, industrial and mercantile area in the city comes in for scrutiny. Violations not quickly corrected are referred to proper authorities for correction.

N.Y.F.D. Photo by Hellriegel

Literally thousands of violations such as this have been uncovered by New York fire inspection squads in the city's stepped-up fire prevention program. Here a fire inspector points out hazardous violation of regulations to occupant. Note combustibles piled against doorways.

N.Y.F.D. Photo by Hellriegel

Firemen of Engine 9, New York Fire Department, conducting radio field inspections on the City's lower east side tenement district, are briefed by their officer. Work clothes are permitted but caps and badges must be worn.

N.Y.F.D. Photo by Hellriegel

One of an engine company crew pointing out violations to occupant of a print shop. Apparatus, with driver monitoring radio, is just outside, ready to "roll" upon receipt of an alarm from the company's district.

$23 million) be reduced, and the number of fires (over 54,000, of which 90 per cent were preventable), be materially lowered.

The aim was to raise fire prevention in importance to the level of fire fighting. And high-spotting the proposed program was a radical increase and improvement in property inspections.

Inspections of All Kinds Stepped Up

Less than one year later, Commissioner Cavanagh and his aides in the Fire Department can now report that a strong beginning has been made. Fire Department company inspections have been stepped up; building-to-building inspections by entire fire crews, operating from radio-equipped apparatus, have become commonplace in every Borough, and results are beginning to be noticeable.

"We have set a standard," reports the Commissioner, "and have accomplished even at this early date a continuing inspection job that has earned the plaudits of fire fighters, underwriters and public officials throughout the country.

Edward F. Cavanagh, Jr., was appointed Fire Commissioner on February 15, 1954. On February 26, the first F.D. Special Order (No. 33) went to all forces detailing the "pilot areas" in the Boroughs of Manhattan, Bronx, Brooklyn and Queens in which departmental squad inspections would be conducted. These inspection squads were to be made up of the nearest engine company, fully manned. The company unit was to remain in service and respond to alarms received during the period of inspection. Four men in each of four Divisions were selected by Division commanders and detailed as building inspectors to report to the quarters of the units mentioned within the respective Division districts. These men were in addition to the regular company crews which conducted the inspections. In April the pilot inspections were increased by the addition of other squads and areas (Special Order 71). In May Special Order 77 was promulgated. Its opening paragraphs read: "The experimental stage of Fire Prevention inspections through the medium of members with apparatus has proven sufficiently successful to indicate a tremendous potential in the promotion of fire prevention. The basic foundation for fire prevention activities in this Department starts with the field inspectional duties performed by uniformed members. Inspectional work functions must be carried out efficiently by all members. Fire prevention activities by members with apparatus will be increased and enlarged upon in all parts of the city under the direct supervision of the Chief of Department. These activities will be flexible and have the following purpose:

1. To establish a program of Fire Prevention activities to be participated in by all members.
2. To obtain information for Fire Prevention orders or referrals to other departments.
3. To provide a medium for Fire Prevention education to all the people of the city.
4. To obtain knowledge of structural and occupancy hazards for use in possible fire fighting operations.
5. To reduce the cause and spread of fires."

Field Inspection Requirements

This order set forth the procedures for future inspections which were to be made daily between 10:00 A.M. and 1:00 P.M. Some of the details included: companies were to keep the Dispatcher notified of inability to leave quarters. Preparation for inspectional work was to be planned and executed in orderly, systematic manner. An officer and not less than three firemen shall perform required services. Only radio-equipped pumpers or quads shall be used for such activities. Companies shall maintain radio contact with the dispatcher. Each shall carry a copy of the box numbers and locations of all its first alarm assignments. The dispatcher will radio the necessary instructions for responses or relocations for all first and greater alarms transmitted on which a company is involved. If fire conditions warrant, the dispatcher in the borough may order the return to quarters of all or any companies. Uniform cap, badge, uniform coat and clean work trousers are required. Regulations regarding operation, care and condition of apparatus, tools, etc., shall be strictly complied with during activities. On the third of each month company commanders shall forward a consolidated report of all inspections for the previous month.

Schedules for inspection activities were established for all Boroughs. These were later increased (October, 1954) to include ladder companies. In the case of the latter, the apparatus itself was not removed from quarters, but crew members were detailed to act jointly with designated engine company crews.

For five days out of each week the crew radio inspections have been carried out, with the operation no longer on a "pilot" basis. "These inspections will continue without cease," said the Commissioner. "For when we have completed inspection of every building in the city, we will start a fresh inspection and continue year in and year out."

STATISTICAL REPORT—FIELD INSPECTION ACTIVITIES

	Chief Officers Inspection		Apparatus Field Inspect.		Company Bldg. Inspect.		Division of F. P. & Comb.		Totals	
	No. Insp.	No. Viol.	No. Insp.	No. Viol.	No. Insp.	No. Viol.	No. Insp.	No. Viol.	No. Insp.	No. Viol.
Jan.	490	25	....	....	65,948	978	8,234	1,362	74,672	2,365
Feb.	531	31	....	....	45,519	974	7,305	1,849	53,355	2,854
Mar.	453	59	....	....	53,305	3,309	8,847	1,874	62,605	5,242
Apr.	488	68	925	126	52,935	2,598	7,149	1,709	61,497	4,501
May	466	96	13,444	3,252	55,402	2,792	7,483	1,614	76,795	7,754
June	654	174	22,557	3,745	60,117	3,139	6,651	2,027	89,979	9,085
July	508	47	22,741	4,724	56,429	1,855	2,793	987	82,471	7,613
Aug.	457	113	23,402	3,079	49,285	1,972	5,830	1,467	78,974	6,631
Sept. ...	459	49	22,170	2,642	52,476	2,028	6,515	1,162	81,620	5,881
	4,506	662	105,239	17,568	491,416	19,645	60,807	14,051	661,968	51,926

N.Y.F.D. Photo by Hellriegel

Many violations are corrected immediately—some not. New York's Fire Commissioner Edward F. Cavanagh, Jr., says there will be no let-up in fire department squad inspections. From January to September, 1954, firemen made 661,968 field inspections and turned up 51,926 violations.

A breakdown of the inspections as disclosed by Commissioner Cavanagh to FIRE ENGINEERING follows:

	No. of Inspections	No. of Violations
By company building inspectors March 1 to June 30*	299,477	9,982
By chief officers February 15 to July 9	2,702	428
Inspectors, Division of Fire Prevention February 15 to July 9	24,863	7,365
Apparatus Field inspection activities May 10 to July 9	36,001	6,997
Resort areas—apparatus and members June 8 to July 9	4,018	1,737
Totals	367,061	26,509

*The New York Fire Department has long had a policy of company inspections, conducted by "Company Inspectors," but in which no apparatus was moved.

The total number of similar violations in 1952 was 31,399, or only 4,830 more than the number found in the current inspectional activity which did not get into its full stride until May 10, only six weeks before the July report above.

The preceding statistical Report of Field Inspection Activities goes further, and shows total inspections from January to and including September, 1954. During this period, it will be noted, a total of 661,968 inspections were made and 51,926 violations reported. It should be mentioned here that in case of an industrial building, if it contained six occupancies, it is regarded as six inspections. In all others, each building is recorded as one inspection.

When twelve people died in New York City over the weekend of Nov. 30-31 as a result of faulty gas water heaters, and the City's Health Department, which has jurisdiction over inspections of such installations, was unequal to the task of checking up on all the widespread hazards (made more acute by the sudden cold spell) Commissioner Cavanagh offered the services of his crews doing field inspection in an effort to ferret out more of the faulty installations and to report them to the proper authorities for action. The Fire Department assisted in resuscitator work aiding police, health and medical agencies; furthermore, its members are, for the most part, familiar with the heaters and their drawbacks and faults.

As the death toll from gas appliances continued to mount, sound trucks toured the city warning occupants of tenements of the hazard. Additional men were sent out on inspections by the Department of Health. The Department of Housing and Buildings, which also has a stake in the problem, ordered its inspectors to greater efforts at cooperation, and to enforce violations of its jurisdictional housing and regulations.

Mayor Wagner added his warning, and the City Council convened to revise safety rules by insisting upon installations of vents outside buildings from any room in a multiple dwelling in which a gas appliance for heating is placed.

Fire fighters, although able to locate and report such violations, have no authority to go further. However, the Fire Department was plunged into the vortex of a related problem, when inspections (and a number of fatal fires) disclosed that extreme fire violations were found in multiple dwellings, most of them converted rooming houses. Fire fighters found stairway sprinkler systems (mandatory in certain types of such occupancies) inoperative. In many, the systems were completely disconnected from the water supply.

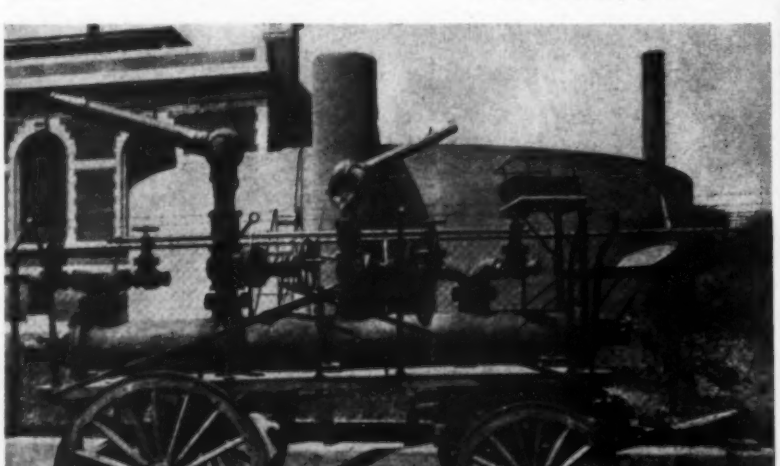
As a result of these disclosures, Commissioner Cavanagh on December 10 detached 50 firemen from regular fire-fighting duties and assigned them to round-the-clock watch at some 16 dwellings, most of them single-exit type units which he called "nothing but fire-traps."

"Cannon Wagon," a Fire Fighting Relic

In back of the Special Service Fire Station at 6th above Lehigh, Philadelphia, Pa., stands a rust-encrusted relic of a by-gone era. The days of the iron men with the leather lungs and the indomitable spirits which are part of the heritage of the Fire Department. It is the "Cannon Wagon" used, in its day, for deluging purposes and to smash down walls with a snapping stream of water. This piece of apparatus came into the Department about 1909.

It was a horse-drawn wagon that had two mounted nozzles which could be fed by four three and one-half inch intakes. There were also four two and one-half inch outlets from which lines could be stretched. Deputy Chief John Laughlin

(*Continued on page 65*)



View of the Cannon Wagon at its final resting place in the yard of the Special Service Fire Station.

Future of "Firestop" Bright As 1954 Field Tests End

Demonstrations Covering Three Months Disclose Novel Methods of Operating on Large Area Fires

By CLIFF DEKTAR

FINAL field experiments of "Operation Firestop" were held at the United States Marine Corps Base at Camp Pendleton, California, on October 27, followed by a meeting of the "Firestop" executive committee at the University of California at Berkeley.

All present at the November 12 meeting agreed that the "Firestop program should be carried on and ways and means of continuing the experiments were discussed."

"If the present interest continues, we should say that the future of 'Firestop' is extremely bright," reported Los Angeles County Fire Chief Keith E. Klinger, and Deputy State Forester, James K. Mace, members of the executive committee, and two of the program's biggest boosters in the fire service.

"We have much work to do," they reported after the Berkeley meeting, "but we have all agreed that the program is on the right track."

Also present at the Berkeley meeting was Lloyd Layman, Director of Fire of the Office of Technical Services of the Federal Civil Defense Administration. Layman expressed keen interest and enthusiasm in the recent "Firestop" tests and praised the various agencies which helped make the program possible.

"Operation Firestop" is a cooperative program of those agencies in California which are concerned with the control of large fires. Included among the agencies participating are the California Division of Forestry, U.S. Forest Service, Los Angeles County Fire Department, Los Angeles City Fire Department, University of California School of Forestry, U.S. Weather Bureau, and the California Forest and Range Experiment Station. The Federal Civil Defense Administration and the California Office of Civilian Defense as well as the California State Fire Marshal's Office and the Pacific Intermountain Association of Fire Chiefs also participated in the tests.

The executive committee was told that a complete documentary-type film on the Camp Pendleton field tests will be available in the spring to interested fire fighting agencies.

Also at the executive committee meeting there was a demonstration of a light, industrial-type television camera and receiver which it is believed may have a place in direction and control of large scale fires.

"With a camera like this mounted in a helicopter, a chief officer could sit in his field headquarters and survey the entire situation carefully," pointed out Chief Klinger. There was also some discussion of mounting the small TV cameras in fire lookout towers.

All statistics on the field tests are now being compiled at the University of California School of Forestry under the direction of Project Director Dr. Keith Arnold.

"It will be difficult and unfair to draw any intermediate conclusions on the tests," said Dr. Arnold. "We want to analyze all of our tests carefully. However, we hope to release the full report soon."

As to the final field operations at the sprawling Marine base south of Los Angeles, aircraft played an important role in all the tests.

Most important part taken was by the big S-55 helicopters provided by the El Toro Marine Air Station.

"I cannot emphasize the gratitude of 'Operation Firestop' to the Marine Corps for its splendid cooperation in helping us with these tests," said Dr. Arnold.

The S-55s were used to drop small plastic water bombs on spot fires. Then a large bulk drop of water from a tank

Marine Corps S-55 helicopter carries group of small plastic bags filled with water toward fire during tests of "Operation Firestop" at Camp Pendleton.

Water drops from belly tank on Marine Corps S-55 helicopter during "Operation Firestop" at Camp Pendleton. Note bulldozed firebreak at right with observers on hilltop at right top.

Marine Corps S-55 helicopter begins aerial hose lay at "Operation Firestop" tests at Camp Pendleton. Hose is carried inside helicopter. One end has just been dropped to pumper on hillside and now 'copter is laying first of 1,000 feet of the inch line across canyon toward camera.

Ranger stands by small pump and 100 gallons of water airdropped by helicopter to put out small spot fire. Note hose leading toward smoke from right front of device. Observers on hill in rear.

carried by the helicopter, informally called the "flying bathtub," was also used.

Observers pointed out that both of these methods could be valuable in delaying the spread of a fire until ground crews arrived, but that it also probably would be extremely difficult to completely control a major fire by this method.

One of the most interesting operations was the picking up and setting down on the fire lines of a portable "helitanker." This was a small pump and a tank with 100 gallons of water on a platform. Two men were also airlifted with the rig by the helicopter.

"This type of operation could save us hours of walking up a mountainside and in many cases would be sufficient to stop many spot fires," stated James K. Mace.

In another maneuver, 1000 feet of inch hose was laid from a bed in the helicopter itself. One end was dropped near a pumper for hookup and the other carried across a steep canyon to the scene of the fire. The line was then charged. Fuller exploitation of this aerial hose lay will be carried on, it was reported. However, there are certain technical problems involved with the long aerial lay that still must be worked out, observers reported.

A demonstration was also held of an aerial helicopter rescue with a man being plucked out of a "danger" area by a cable dropped from the helicopter's cabin winch.

Fire retardent chemicals again were tested. First as an aid to backfiring when speed of operations is essential, a chemical was applied to brush which was mashed down by a bulldozer. The chemical kept the fire from backing across a line perpared in this way. It also may allow a longer interval between backfiring and mop-up activities.

Another area was pre-treated to show the effect of the chemical in slowing or stopping the head of a fire so that men may work on it with relative safety.

It was pointed out that the study of many other chemicals is still under way.

As a finale, bulk delivery of 600 gallons of water was made from a torpedo bomber piloted by Paul Mantz. The bomber water drop test—originally scheduled for August but delayed because of technical difficulties—went off on schedule.

"The water drop did not extinguish the fire completely, but we really didn't expect it to," stated Chief Klinger. "However, it did allow men to go in and work on the fire, whereas before they were unable to get near it."

Most observers were unanimous in their feelings that the entire testing program had been a success.

"After watching these operations and the previous ones in August, most of us have concluded that there is a tremendous potential use of helicopters of all types by firefighting agencies," reported

(*Continued on page* 85)

LEFT:
Dr. Keith Arnold, center, manager of "Operation Firestop" discusses field tests at Camp Pendleton with members of the executive committee present at October 27th tests at the Marine base. Left to right, Dr. Hoyt Lemons, FCDA; Chief S. H. Edmondson, Pasadena Fire Department; Dr. Arnold; James K. Mace, Deputy California State Forester; Chief Keith E. Klinger, Los Angeles County Fire Department; Assistant Chief Harold N. Johnson, Los Angeles City Fire Department.

Methods of Controlling Extra-Difficult Fires Indicated by

Fuel Extinguishment Research

By J. E. MALCOLM

The Engineer Research and Development Laboratories of the Corps of Engineers, U. S. Army, located at Fort Belvoir, Va., have been carrying out a research program on fire extinguishing agents for the past several years. This program, probably the most thorough, and most comprehensive ever attempted in the field of fire extinguishment, has resulted in the production of much virgin information on the effectiveness of extinguishing agents and techniques.

At the Fire Extinguishment Research and Engineering Symposium, held at the U. S. Naval Civil Engineering and Evaluation Laboratory, Port Hueneme, Calif., on November 16-18, 1954, J. E. Malcolm, Chief, Agents and Techniques Section, Fire Fighting Branch, C. E. Department, of the Fort Belvoir Laboratories, described studies which had been undertaken to develop fire fighting agents and techniques which may be used in controlling fires involving unconventional fuels, i.e., rocket propellants.

Through the courtesy of Mr. Malcolm, and Vincent A. Otto, Technical Liaison Officer of the Laboratories, we are privileged to reproduce this very informative, interesting paper by Mr. Malcolm.

Incidentally, this presentation gives a good example of the growing complexity of fire hazards brought about by technological advance—Editor.

FIRST, it may be well to review the terminology which has been found convenient in the discussion of the unconventional fuel fires. These fuels are frequently referred to as rocket propellants, and here we will be concerned with liquid fuel systems, though solid propellants are also used in rocket propulsion. There are two main classes of liquid propellant systems: bipropellant and monopropellant fuel systems. In a bipropellant system, a fuel resembling, or similar to, conventional fuels and an oxidizer are used, and they are injected separately into the rocket power plant. A monopropellant contains its own oxidizing component and it is injected into the rocket power plant where it decomposes with the liberation of heat energy as a result of high temperature or catalyst. Examples of bipropellant systems are:

(1) JP-4 and red or white fuming nitric acid,
(2) aniline and red fuming nitric acid,
(3) aniline-furfuryl alcohol and red fuming nitric acid,
(4) xylidine-gasoline and red fuming nitric acid,
(5) gasoline and liquid oxygen,
(6) ethanol-water and liquid oxygen,
(7) ammonia and fluorine, and

*Chief, Agents and Techniques Section, Fire Fighting Branch, C.E. Dept., Engineer Research and Development Laboratories, Corps of Engineers, U. S. Army, Fort Belvoir, Va.

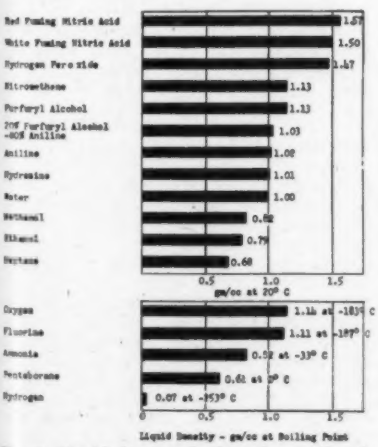
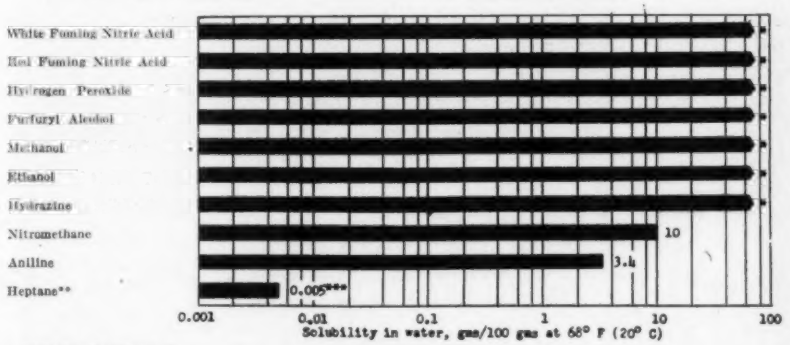
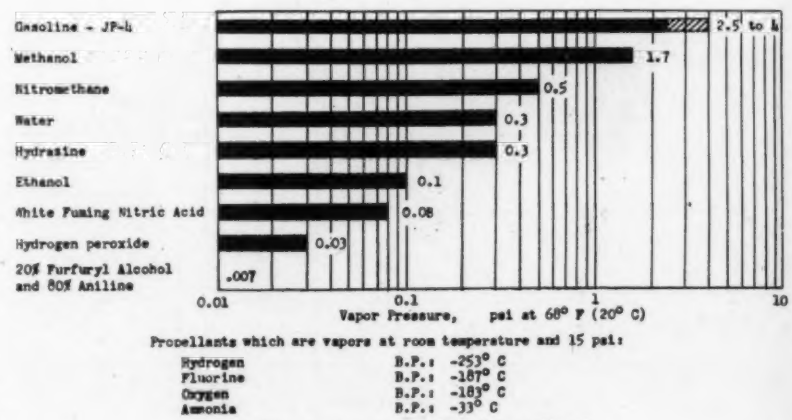


Fig. 1. Liquid density of selected propellants[1].



*Completely soluble
**Specimen hydrocarbon component of JP-4
***at 60° F (15° C)

Fig. 2. Solubility in water of selected propellants[1].



Propellants which are vapors at room temperature and 15 psi:

Hydrogen	B.P.: -253° C
Fluorine	B.P.: -187° C
Oxygen	B.P.: -183° C
Ammonia	B.P.: -33° C

Fig. 3. Vapor pressures of selected propellants[1].

(8) hydrazine hydrate and hydrogen peroxide.

Nitromethane and nitroethane are examples of liquid monopropellants.

In the preceding tabulation of the bipropellant systems the fuel components, or that component which will burn freely in air, is cited first, and the oxidizer is tabulated last. The oxidizer furnishes oxygen, or is itself an oxidizing agent in the rocket power plant combustion. Free combustion (that is combustion outside a rocket combustion chamber) involving both propellant fuel and oxidizer is much more intense and rapid than free combustion of the fuel component alone in air. This type of combustion has been termed "flare" burning in studies underway at our laboratories.

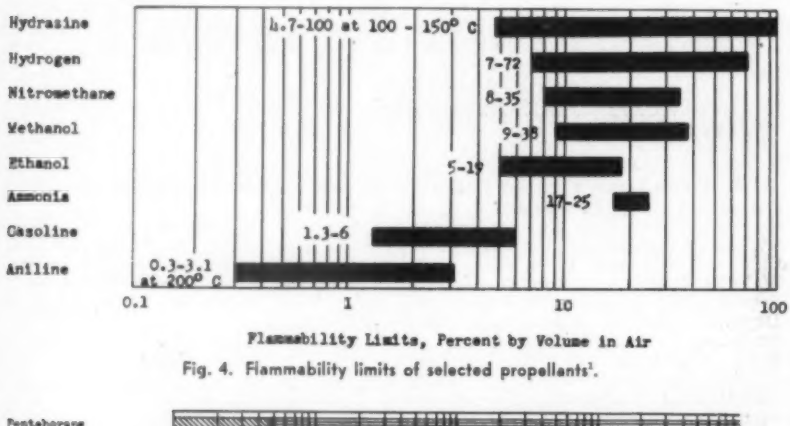


Fig. 4. Flammability limits of selected propellants[1].

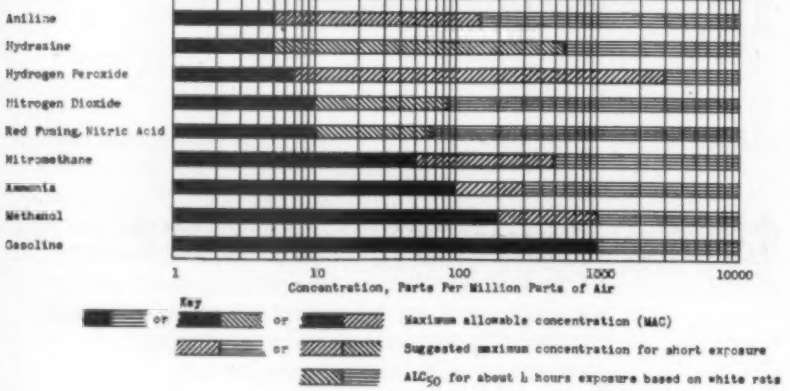


Fig. 5. Toxicities of selected propellants[1].

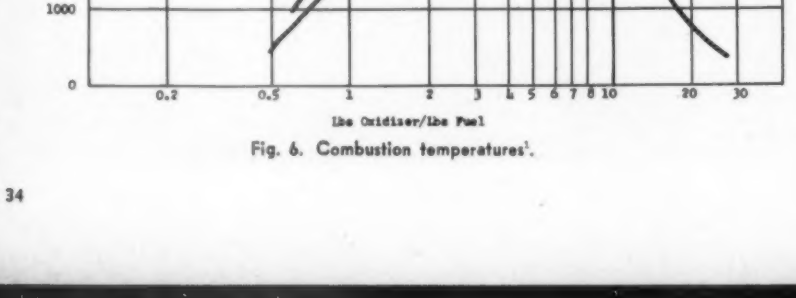


Fig. 6. Combustion temperatures[1].

In certain bipropellant systems, combustion will initiate spontaneously after the fuel and oxidizer components are mixed together. A system which exhibits this characteristic is designated as being "hypergolic." This ignition is not truly instantaneous (requiring fractions of a second), since the ignition is excited by the initial reaction of the fuel and oxidizer, which results in sufficient heat generation to cause ignition.

Certain systems though not classed as hypergolic may, on occasion, spontaneously ignite; such as JP-4 and red fuming nitric acid. This spontaneous ignition may occur when the concentration of unsaturated hydrocarbons is high in the JP-4 (that is with JP-4 fraction of high bromine number).

In the approach of the study of extinguishment techniques with these new propellant fuels, to understand the nature of the problems, initial consideration must be given the physical properties of these types of compounds. In considering fire extinguishing agents, first thought is perhaps directed to water. On examining the densities of some of the propellants, the relationship of these densities with that of water can be demonstrated as shown in Figure 1. Here, it is indicated that there are few propellant types which are less dense than water, and the hydrocarbons, which are generally well known from the standpoint of their combustion characteristics, comprise one of these types. The next property of interest in connection with the use of water is miscibility or solubility in water. Figure 2 shows that of the propellants discussed, nitromethane, aniline, and hydrocarbons have limited solubilities in water. The third property to be considered in connection with the properties of density and solubility is the vapor pressures of the selected propellants. Figure 3 depicts the vapor pressure characteristic of the liquid propellants at normal room temperature. The vapor pressure of a combustible compound can be taken as a rough index of its fire hazard in the open air, even though a precise evaluation of the fire hazard would include the wideness or narrowness of the flammable limits of the particular compound in air. Figure 4 presents the flammable limits in air of selected propellant fuel vapors for the most part at normal room temperature. From these data the fire extinguishing problem may be evaluated. It can be seen that one of the most difficult fuel fires to extinguish will be the type involving the hydrocarbon base propellant fuels, since they display significant flammability ranges, have appreciable vapor pressures, and are immiscible with, and will float on, water. Fortunately, in a manner of speaking, this type fuel fire is a conventional fire with which there is considerable fire fighting experience. Although the alcohols are water missible, methanol and ethanol have sufficiently high vapor pressures to support combustion even after considerable dilution, so that a blanketing type extinguishing technique, such as afforded by foam, is desirable in combatting a bulk liquid fire, as in fires of this type with the hydrocarbon propellant fuels.

Use of water in combatting fire with boranes cannot be made without the evolution of hydrogen, which is also flammable. In addition to the fire ex-

tinguishment problem with fuels, the reaction of most of the oxidizers with or without ensuing fire on accidental contact with combustible materials requires that positive action be taken to eliminate the hazard presented in the event of spillages. Since the oxidizers discussed here (with the exception of those such as fluorine and oxygen) are water miscible, elimination or attenuation of the oxidizer may be made by dilution and washing away from the point of hazard. The nitric acids present a particular problem in this respect, however, since in the initial stages of dilution copious fuming occurs (liberation of NO_2 by red fuming HNO_3).

Use of water on fluorine or chlorine trifluoride cannot be made without the generation of hydrogen fluoride, which is nearly as objectionable though nonflammable, as elemental fluorine. To this point the extinguishing of fire, or dilution only, have been considered in the propellant hazard. In the fighting of fires or the handling of spills another characteristic of the propellants must be recognized, that is the toxicology of the compounds concerned. Here, fortunately, industrial use has provided significant information on the effects of these compounds, some of which was derived with the sacrifice of human life, as in the history of aniline, and studies have been undertaken by the Army Chemical Corps Medical Laboratories to supplement the available data. Comparative toxicological properties of selected propellants are shown in Figure 5. In this figure available data have been summarized to indicate the maximum allowable concentrations, in most cases for eight-hour exposure, short term allowable concentrations which do not result in significant effect, and approximate lethal concentrations for 50% mortality in laboratory animals on about four hours exposure. The boundary lines indicate the maximum allowable concentration, the maximum short term concentration, and the ALC_{50}.

In addition to the characteristics of the propellants taken individually, the combustion characteristics of the fuel oxidizer systems must be considered in the development of techniques to afford full fire protection. In Figure 6 the flame temperatures at various mixture ratios of selected bipropellants are shown. For comparison, an open gasoline fuel spill type fire yields a flame temperature generally under 2,000° F.

Thus far we have reviewed quickly the basic characteristics of the propellents which we may term as new fuels, and from these we see that the problem of fighting fires and inerting material spills, as compared to studies of extinguishment alone, can be approached as follows:

(1) study of propellant fuel extinguishment, with particular reference to the fire protection of light alcohol fuels,

(2) study of the effect of conventional fire extinguishing agents on the extremely reactive propellants such as boranes, fluorine and chlorine trifluoride,

(3) study of effective means of inerting highly reactive propellants such as the fuming nitric acids, fluorine, hydrogen peroxide, chlorine trifluoride, and the boranes, both from the standpoint of accidental spills and personnel contact,

(4) study of the combustion characteristics of fuel-oxidizer mixtures, and the agents and means by which this type of combustion may be extinguished,

(5) study of toxicological hazards of propellants,

(6) development of equipment for handling the extinguishing agents required for specific hazard protection, and

(7) study of requirements and development of personnel protective equipment, clothing and breathing apparatus.

In initiating any studies, however, priority will be given to those propellants which are operational or scheduled for early use. Those systems cited to this point do not necessarily include all of those of current interest, and studies to date by all agencies concerned have

Fig. 7. Remotely controlled test cells.

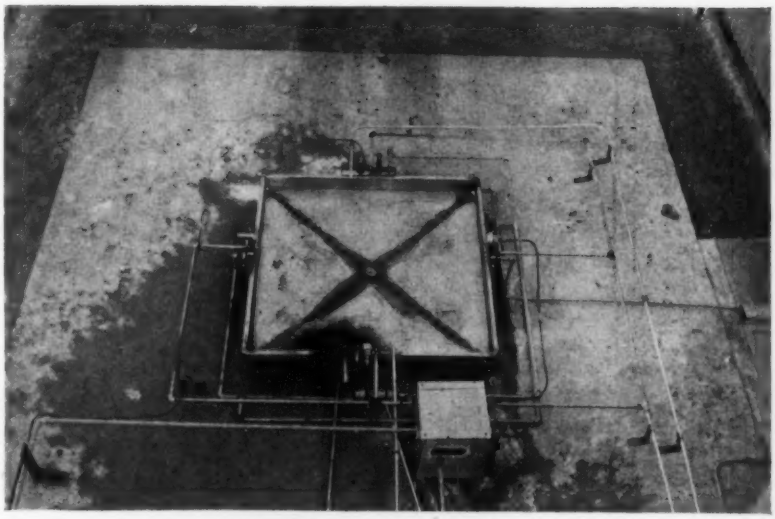


Fig. 8. Remotely controlled test cell burning pan.

Fig. 9. Prototype rocket fire fighter.

been directed by the immediate requirement of the particular agency.

Acknowledgement is made here of the past and present work on the above approaches which has been undertaken by others than the Engineer Research and Development Laboratories.

Studies have been sponsored by the Wright Air Development Center toward the development of an alcohol stable foam liquid. Evaluations of commercial products have been made at the New York Naval Shipyard, and at present there are commercial foam liquids which may be used to combat water miscible solvent fires, which include those involving the lighter alcohols. There are certain conditions of application of these products which tend to limit their general application, such as with some of the formulations, mixing of the foam liquid with water must be accomplished immediately prior to foam generation. The complete gamut of engineering data, such as critical application rates for the fuels concerned, however, has not yet been developed for these formulations.

Fig. 10. Propellant charge fire test. Blasting out of wall separating fuel and oxidizer.

Fig. 11. Initial application of water 30 seconds after the initial fire.

Effect of fire extinguishing agents in inhibiting flammability of propellant fuels, and the effect of selected agents on fluorine have been studied by the Purdue Research Foundation in a program sponsored by the Wright Air Development Center.

Currently there is a study, underway at the Army Chemical Center Chemical and Radiological Laboratories, sponsored by the Wright Air Development Center, to develop means of minimizing the evolution of fumes on dilution of the fuming nitric acids. Progress has been made in this study and our laboratories will coordinate in any developments of inerting equipment or techniques with the Chemical and Radiological Laboratories.

The Aerojet Engineering Corporation has conducted extensive studies on the combustion characteristics of propellant system, and has investigated the small scale extinguishment characteristics in this program, which was also sponsored by the Wright Air Development Center.

Studies on the toxicology of selected propellants has been undertaken by the Army Chemical Center Medical Laboratories. These studies have been coordinated with the three Defense Departments, so that priorities could be established on the propellents of operational interest.

References to these studies and a report bibliography are presented in the appendix to this paper.

Development of protective clothing and breathing apparatus are problems which are handled in the Army separately from the Fire Fighting Problem. Both the Quartermaster Corps and the Wright Air Development Center have developed protective clothing, and such clothing is also commercially available which is suitable for protection against currently operational propellants. Two types of self-contained breathing apparatus are commercially available; stored air or oxygen, and chemical oxygen generating cannister types. Development of the latter type was conducted at the Naval Research Laboratories during World War II, in which sodium

Fig. 12. Propellant charge fire test. Full effect of water application in control of the propellant fire.

Fig. 13. Propellant charge fire test. Control fire, without attempt to extinguish.

peroxide is an active constituent.

Studies undertaken at the Engineer Research and Development Laboratories can be divided into the following fields of activity:

1. Engineering studies on the extinguishment of intermediate scale bipropellant fires to determine the types of extinguishing agents which will be effective in control of the "flare" burning, and the application rates of these agents which will be required,

2. Large scale simulated missile fire tests to determine the feasibility of combatting full scale missile fire involvements, and

3. Development of fire fighting equipment for specific missile fire fighting operations, and field emergency showers for personnel protection in the field.

Tests are planned to develop engineering data for fire protection of alcohol type fuels, and other new fuels, in storage, and field techniques for minimizing the generation of nitrogen dioxide on dilution of red fuming nitric acid.

In order to conduct the engineering studies, a test cell was designed and constructed which enables the carrying out of the fire tests with the minimum manual handling of the propellants by test personnel. Figures 7 and 8 show two views of this test set up. Figure 8 shows the pan in which the propellants are mixed, and where the propellant fire is ignited with the acetylene igniter in tests with non-hypergolic systems. Actual operation of the tests is made in a control house located over 300 feet from the cell. In addition to remote control, some of the test data such as extinguishing times and weights of some of the extinguishing agents used, are automatically indicated in the course of the test sequence. Modifications are planned to this unit as now operating to permit the use of liquid oxygen and fluorine if studies on this oxidizer will be required in the future.

To date a series of tests on the JP-3

APPENDIX I - Characteristic Data for Selected Propellants

Table I - Bipropellant Fuels

Fuels	A M.P. °C (ref)	B B.P. °C (ref)	C Liquid Density gm/cc (ref)	D Solubility gm/100 gm H_2O (ref)	E Vapor Pressure MM (ref) 20° C or as Noted	F Flammable Limits % by Vol (ref)	G Toxicity: Working MAC ppm (ref)	H Toxicity: Short Term MAC ppm (ref)	I Toxicity: ALC_{50} for Rats Approx 4 Hr Exposure ppm (ref)	J Flash Point (ref) °F	K Auto Ign Temp (ref) °F
1. Aniline $C_6H_5NH_2$	-6.2 (1)	184.4 (1)	1.022 (1) at 20° C	3.4 (1) at 20° C	0.007 (18)	0.3-3.1 (4) at 200° C	5 (2)	150 (2)	----	168 (2) closed cup	1000 (2)
2. 80% Aniline and 20% Furfuryl Alcohol	-28.9 (5)	176.67 (5)	1.035 (5) at 15.6° C	----	0.007 (18)	----	----	----	----	175 (2) closed cup	----
3. Ammonia NH_3	-77.7 (1)	-33.35 (1)	0.817 (1) at -79° C	52 (1) at 20° C	Vapor State	16-25 (2)	100 (2)	300 (2)	----	----	1204 (16)
4. Ethanol C_2H_5OH	-117.3 (1)	78.5 (1)	0.7893 (1) at 20° C	∞	0.85 (calc: 5)	5-19 (4)	1000 (2)	----	----	55 (1) closed cup	700 to 800 (2)
5. Furfuryl Alcohol $C_4H_3OCH_2OH$	-31 (5)	171 (1)	1.1296 (1)	∞	0.008 (18)	----	----	----	----	167 (17)	915 (2)
6a Gasoline	-73.3 (5)	37.8 (17) to 204.4	0.75 (17)	----	3.5 (calc: 5)	1.3-6 (2)	1000 (2)	----	----	-50 (2)	495 (2)
6b Heptane - N $CH_3(CH_2)_5CH_3$	90.5 (1)	98.5 (1)	0.0684 (1) at 20° C	0.0052 (1) at 15.5° C	0.7 (18)	1.2-6.7 (11)	500 (2)	----	----	25 (17)	452 (17)
7. Hydrazine H_2NNH_2	1.4 (1)	113.5 (1)	1.011 (1) at 15° C	∞	0.3 (calc: 12)	4.7-100 (11)	5 (14)	----	570 (15)	55 (20)	518 (17)
8. Hydrogen H_2	-259.18 (1)	-252.8 (1)	0.070 (1)	0.173×10^{-3} (1)	Vapor State	7-72 (4)	----	----	----	----	1085 (17)
9. Methanol CH_3OH	-97.8 (1)	64.65 (1)	0.7928 (1) at 20° C	∞ (1)	1.7, 1.8 (calc: 12, 18)	9-38 (4), 6-35 (2)	200 (2)	1000 (2)	----	60 (2)	800 (2)
10. Pentaborane B_5H_9	46.6 (1)	0 (1)	0.61 (1) at 0° C	Decomp (1)	Vapor State	----	----	----	less than 5* (9)	Spontaneously	Flammable (1)

20° C = 68° F

*For mice

Table II - Bipropellant Oxidizers

Oxidizers	A M.P. (ref) °C	B B.P. (ref) °C	C Liquid Density gm/cc (ref)	D Solubility (ref) gm/100 gm H_2O	E Vapor Press PSI, 20° C (ref)	G Toxicity: Working MAC ppm (ref)	H Toxicity: Short Term MAC, ppm (ref)	I Toxicity: ALC_{50} for Rats Approx 4 Hrs Expos ppm	L Remarks
1. Fluorine F_2	-223 (1)	-187 (1)	1.1080-1.187 (1)	Decomp (1)	Vapor State	1 (2)	----	----	----
2. Hydrogen Peroxide H_2O_2	-89 (1)	152.1 (1)	1.4646 (1) at 0° C	∞ (1)	0.03 (calc: 12)	less than 7 (7)	3000 (7)	----	Iron, Copper, chromium catalyse decomposition
3. Nitrogen Dioxide NO_2	-9.3 (1)	22 (calc: 19)	1.491 (1) at 0° C	Reaction (1)	13.5 (19)	10 (2)	----	88 (6)	----
4. Red Fuming Nitric Acid HNO_3	----	----	----	∞ (1)	----	10 (2)	----	65 of (6) NO_2	----
5. White Fuming Nitric Acid HNO_3	-74.8 (5)	82.8 (5)	1.5 (calc: 5) at 15.5° C	∞ (1)	0.8 (calc: 5)	10 (2)	----	----	----
6. Oxygen	-218.4 (1)	-183 (1)	1.14 (1) at -183° C	7×10^{-3} (1) at 0° C	Vapor State	10^6	----	----	----

Table III - Monopropellants

	A M.P. (ref) °C	B B.P. (ref) °C	C Liquid Density gm/cc (ref)	D Solubility gm/100 gm H_2O (ref)	E Vapor Press, 20° C psi (ref)	F Flammable Limits % by Vol (ref)	G Working MAC ppm (ref)	H Short Term MAC ppm (ref)	I ALC_{50} for Rats, Approx 4 Hr Exposure ppm (ref)	J Flash Point (ref) °F	K Auto Ign Temp (ref) °F
1. Nitroethane $C_2H_5NO_2$	<-50 (1)	114.8 (1)	1.054 (1) at 20° C	4.5 (1) at 20° C	0.31 (18)	----	50 (2)	500 (2)	----	82 (2) closed cup	778 (2)
2. Nitromethane CH_3NO_2	-29 (1)	101 (1)	1.130 (1) at 20° C	10 (1) at 20° C	0.54 (18)	8-35 (4)	50 (2)	500 (2)	----	112 °(2) open cup	785 (2)

20° C = 68° F

red fuming nitric acid system have been conducted in which the fuel and oxidizer were admitted to the burning area at rates of 1 lbs/sec and 1.5 lbs/sec. Vaporizing liquid and dry powder fire extinguishing agents were applied to the propellant fire at rates of from 2 to 3 lbs/sec with essentially no effect on the flare phase of the fire. Water applied at the same rates did reduce the flare burning, but since it was applied as a fairly coarse spray it did not extinguish the free fuel combustion.

The resume of the experimental data collected in these studies is included in Appendix II to this paper.

Studies are continuing in this setup to determine the effect of increasing the ratio of extinguishing agent application rate to the rate of propellant mixing.

Soon after the studies on new fuels were initiated it became necessary to determine whether or not mobile fire fighting apparatus could be used for extinguishing a fire involving the bipropellant charge which consists of an aniline-furfuryl alcohol and red fuming nitric acid system. Preliminary calculations, based on the heating value of the fuel, and the burning rate noted in an accidental missile fire, indicated a water application rate of from 1500 to 2500 gpm for prompt extinguishment of this fire. To demonstrate the effectiveness of water applied at such a rate, and to determine more precisely overall water requirements required to control this type of fire and in turn to prevent heat activation of the missile war head, simulated missile fire tests were conducted.

Fig. 14. Fire Truck Class 1500.

To conduct these tests a prototype rocket fire fighter, as seen in Figure 9, was constructed. This unit was provided with two alternate solid stream nozzles; one delivering 1500 gpm at the governed maximum pumping unit output, and the other delivering 2500 gpm. A 4000 gallon water storage tank was mounted on the prototype unit trailer bed. In the fire test shown in sequence of Figures 10, 11, 12, mixture of the bipropellants was made by blasting away, using a small detonating charge, an earthen wall separating pools of an aniline-furfuryl alcohol mixture and red fuming nitric acid. Figure 10 shows the blasting operation and Figure 12 shows the system after control of the fire was established. The copious quantity of nitrogen dioxide fumes generated on dilution of the nitric acid is seen in Figure 12. The control fire, without attempt to extinguish the fire, is depicted in Figure 13. The distance between balloons (white spots on black smoke—Ed.) seen in this figure is 50 feet. After 45 seconds water application at the rate of 1500 gpm on the test fire, application was terminated. Because of the fumes generated it was difficult to determine the exact time of extinguishment. However, when application of the water was discontinued, no fire was observed. In these tests it was concluded that 1000 gallons of water applied promptly to the missile propellant fire at a rate of 1500 gallons per minute would afford adequate fire protection, and these data enabled finalization of the design characteristics for the military fire truck to be furnished for fire protection in missle tactical units.

Detail data on this fire study are presented in the appendix to this paper. Based on the test programs discussed, fire fighting techniques and performance characteristics of fire fighting equipment are established.

For the support of fire fighting techniques for tactical missile units in the field, three major items of equipment are under development. Figure 14 shows an outline sketch of the 1500 gpm military fire truck. Performance characteristics of this unit are as follows:

(1) 1500 gpm pump output at about 150 psig,

(2) 500 gpm pump output at about 300 psig,

(3) engine develops 300 HP at 2400 rpm,

(4) torque convertor,

(5) overcab mounted turret with full 360° traverse,

(6) liquid storage capacity, 1000 gal.

(7) integral body and frame constructed of aluminum,

(8) foam liquid proportioner,

(*Continued on page 74*)

APPENDIX II

TABLE I

The Effect of Various Extinguishing Agents on Twenty Pound JP-3 and Ninety Pound Red Fuming Nitric Acid Mixture Fires at Fuel Discharge Rate of 1 lb/sec and Oxidant Discharge Rate of 1.5 lb/sec.

Agent	Agent Application Time	Number of Valid Fires[1]	Agent Dischadge Rate (lb/sec)[2]	Flare Burning Time (sec)[2,3]	Total Burning Time (sec)[2]	Effect
Fluidized Powder	5	5	3.1	24	77	Some abatement of flames
	10	7	3.2	19	176	No effect
	15	4	3.0	21	210	Some abatement of flames
	15	1	2.5	5	19	Apparently extinguished but reignition not possible
	20	4	2.8	21	358	Some abatement of flames
	20	1	2.5	12	12	Extinguished but flashed back 24 seconds later
	Control Fires	1	..	25	290	.....
CO_2	5	7	2.1	18	89	No effect
	10	8	2.0	16	64	No effect
	10	1	2.8	15	110	Apparently extinguished but flashed back
	15	3	1.9	16	64	No effect
	15	2	1.7	12	19	Apparently extinguished. One fire could be reignited
	Control Fires	5	..	16	55	.....
Bromotrifluoromethane	5	5	2.2	16	51	No effect
	10	2	2.0	14	48	No effect
	15	2	1.7	13	52	Some abatement of flames
	15	2	2.2	11	41	Abatement of flames
	15	3	2.1	8	15	Apparent extinguishment. Subsequent to termination of flare burning period. One fire could be reignited
	Control Fires	2	..	10	43	.....

[1]A valid fire is one in which the predetermined quantities of fuel oxidant, and extinguishing agent were discharged at the desire rates.
[2]Where more than one valid fire is reported, values tabulated are averages for the stated conditions.
[3]Flare burning period was determined by usual observation.

MUCH BASIC DATA DEVELOPED BY FOG NOZZLE TESTS AT U. OF MD.

Discharge Pattern, Flow, Range, Nozzle Reaction and Air Entrainment Included in Data Compiled

THE Sub-Committee on Fog Nozzle Studies, which has been directing the tests to determine the discharge characteristic of fog nozzles under the aegis of the National Fire Protection Association and International Association of Fire Chiefs, met at the University of Maryland on November 4, 1954, to review the final stages of the tests and experiments of the Committee, which have been in process throughout the summer.

For close measurements of gallonage, a government surplus tanker was calibrated and fitted with suction outlet for pumper connection. Here a stopwatch is used to check the withdrawal from tanker.

This work has been under the direct supervision of Robert Byrus, Director, Fire Service Extension of the University of Maryland and has been carried on by University students and volunteer firemen of the area at College Park, Md. Members of the Committee have also been present to contribute their efforts at various times. The Sub-Committee is composed of Robert C. Byrus, Chairman; Herbert R. Bogardus, Chief Engineer Fire Insurance Rating Organization of New Jersey; Fred Shepperd, Editor, FIRE ENGINEERING (represented by Chief Roi B. Woolley, Assistant Editor); George L. Swan, Assistant Chief Engineer, National Board of Fire Underwriters, New York City; Hubert Walker, Manager, MFA Sales Engineering, American - LaFrance Foamite Corp., Elmira, N. Y.; Boyd Hartley, Engineer, National Board of Fire Underwriters, New York City; and Warren Y. Kimball, Secretary, Manager, Fire Services Department, National Fire Protection Association, Boston, Mass.

Review of available information on various types and kinds of fog nozzles available in 1952 disclosed that factual data desired by the fire service on details such as discharge at various angle patterns and pressures, and on patterns and reach, were not immediately available. The sub-committee was empowered to develop methods of securing these data, and related additional basic information.

As the first step in accomplishing its objectives, the sub-committee held preliminary meetings in February and April of 1952 at Maryland University. In July, actual tests began, using facilities and testing ground made available by the American - LaFrance Foamite Corp., at Elmira, N. Y.

Every precaution was taken to prevent mechanical damage to the sample nozzles sent on for tests by manuafacturers, and to keep secure the test data.

Following conclusion of the 1952 tests, the sub-committee met to review the results. It was found that the data acquired, although very helpful in establishing comparatives, were necessarily incomplete because of the limitations of time which prevented extensive tests of the larger types fog nozzles (500 G.P.M and up). There were also some inaccuracies, because of the handicaps of calibrating and measuring discharges, patterns, etc., under conditions prevailing at the time.

It was ultimately decided that the sub-committee should continue its operations, utilizing improved techniques and equipment resulting from the original tests. This decision was furthered when it became known that a grant of approximately $5,000 would be made for fog nozzle studies by the Federal Civil Defense Administration, Washington. This financial support was secured through the efforts of the then head of the Fire Services Division of F.C.D.A., Kyle Laughlin.

Selection of the University of Maryland and the Washington area proved a happy one because of the availability of manpower and other facilities for furthering the tests and experiments. Through the cooperation of various government agencies, tanks were secured for calibrating water input for pumpers, etc.

One of the most difficult of the tasks of the sub-committee was to measure the discharge characteristics of various nozzles, periphery and impinging jet types, according to their patterns. Of the different types, and at different settings, just where was the most effective range, and discharge of droplets in the patterns, and how does the discharge vary in volume and pattern with changes in nozzles setting, such as 30, 60 and 90 degree opening? These were some of the questions the sub-committee attempted to study.

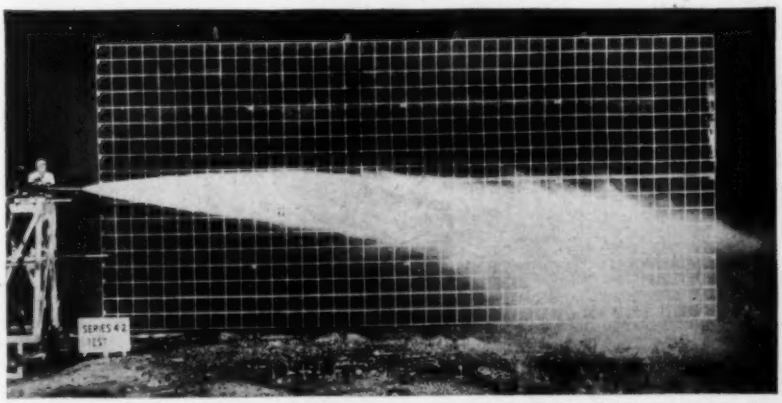
Considerable ingenuity was required before the "mechanics" for gaining these data were perfected. The ultimate "gauge" was contrived out of a set "curtain," or back drop, consisting of a pattern of calibrated glass, receptacles so arranged as to collect the water droplets over an area corresponding with the fog pattern. The glass receptacles were formerly water-tube gauges secured from government surplus and fitted at the top with an angular rubber neck with opening facing the nozzle pattern, and each containing a rubber stopper at the bottom for draining out the contents after measurement. Each glass had a calibrated gauge to permit measurement of contents collected during a test. These contents were later translated into a statistical pattern on graphic sheets.

Special equipment erected on the testing ground of the University included an enlarged graphic backstop developed from that used in the original tests; various water tanks, all calibrated; portable pumps, both lift and vehicular provided by the College Park and other Maryland Fire Departments; and various supplementary platforms and stands.

Most of the discharge tests were conducted at night to facilitate accuracy and uniformity in photographing them. All tests were made under identical conditions. Pattern discharge tests were made in the experimental building on the grounds to insure control of air currents, etc. Smoke bombs and use of colored water were also employed, in this connection.

Some idea of the extent and scope of the enterprise may be taken from the fact, that, during the period of tests, the pumper used operated the equivalent of over 3,000 miles.

Two major factors which previously



Discharge and stream pattern characteristics were gauged and recorded by photographing each pattern against a cross-section blackboard, 40 x 18 feet over-all. All pictures were taken at night, under identical conditions.

have been either missing entirely or have been inconclusive in connection with the use of fog nozzles, have been (1) the nozzle reaction under different nozzle settings and discharges, and (2) the degree of air turbulence set up by, or with the pattern discharge.

For the first time fog nozzle reaction has been calibrated with some degree of accuracy. Here again, ingenuity produced the mechanics for achieving this end. Incidentally, the method of measurement applied equally well to straight streams and fog discharges.

Tests were held on all nozzles with 30, 60 and 90 degree patterns; operating at 75, 100, 125 and 150 pound pressures. It was decided to secure four readings for pressures instead of three, as in the original tests, out of fairness to certain types of nozzles. As before, all nozzles were tested under a keyed code, using no names.

Details of weight and other physical characteristics were noted; also the effects of clogging nozzles through introduction of foreign matter in the line, or nozzle, were noted. Where necessary, stroboscopic lights were used to aid in making photographic comparatives.

Although too early to announce findings of the sub-committee's tests, many interesting fact have been disclosed. One is the relation of air turbulence to fog pattern and size of droplets. This has a very direct bearing on the use of water fog as a medium in venting structures, as well as in fire attack upon certain kinds of fires, in certain occupancies, and under certain weather conditions.

In some tests it was found that the entrained air in the fog pattern, continued some distance farther than the water discharge itself. This and other experiments conducted for the purpose of relating air movements although by no means conclusive, attested the statements contained in the articles on ventilation by means of water fog, and through the use of powered-air movers, in the series on ventilation by Chief Roi Woolley, Assistant Editor of FIRE ENGINEERING, and published in this journal.

Hose is clamped into a triangular metal frame supported on pins, one of which rests on a standard scale. Pressures are regulated by the gate valve and discharge measured by the pressure gauge back of the nozzle. Back pressure, or nozzle reaction, is determined from scale reading.

The sub-committee discussed the methods of compiling and presenting the test findings in publication form. It was brought out that the final report should include comprehensive data on coverage: to include range, pattern and dispersion; and on volume: to include conclusions. This report is intended to be purely fact-finding, and not to develop any amount of water (GPM); also, where possible, details of weight, screening or filtering, nozzle reaction, etc.

Considerable thought is being given to the laboratory tests of water fog droplet patterns, etc., presently being undertaken by the Underwriters' Laboratories, and how these, and the extinquishing tests utilizing fog nozzles as undertaken by the Exploratory Committee, may be unified. No decision will be reached on this score until after the UL data have been released. Talks were also held on the advisability of further tests of high presssure fog nozzles, couplings and hose.

Norfolk Goes to Class I

Improved fire fighting facilities and intensified fire prevention methods which have paid dividends in recent years began paying increased returns January 1, 1955, when Norfolk, Va., received a first class fire insurance risk rating. At that time, penalties which have been applied to commercial insurance coverage in the city were dropped.

The action climaxes an improvement and expansion program of fire protection launched after World War II, when fire fighting conditions and facilities had deterioriated to the point where increased insurance costs were threatened.

The improvement plan included increasing personnel of the fire department; creation of a first class training school for fire fighters; setting up an efficient fire prevention bureau; adding a fire salvage corps; improving the water system, and installing new, modern equipment.

These and other forward steps came on recommendations of the Fire Prevention Advistory Commission to the Director of Public Safety, an organization representing the fire underwriters and headed by John Cahill, Jr., who worked indefatigably to bring about conditions that would bring insurance premiums down.

Los Angeles Firemen Battle Big Christmas Blaze

It wasn't a very Merry Christmas for Los Angeles firemen manning several downtown stations on Christmas morning.

Seven companies under Acting Division Chief John P. Dick battled a fire in the Galeria Room of the famed Biltmore Hotel. The fire was confined to the room, although for a time it threatened nearly $1,000,000 in paintings hung in an adjacent art gallery. Damage was estimated at $75,000.

The fire worked its way into the walls and the crews were forced to use axes extensively. Overhauling took nearly four hours.

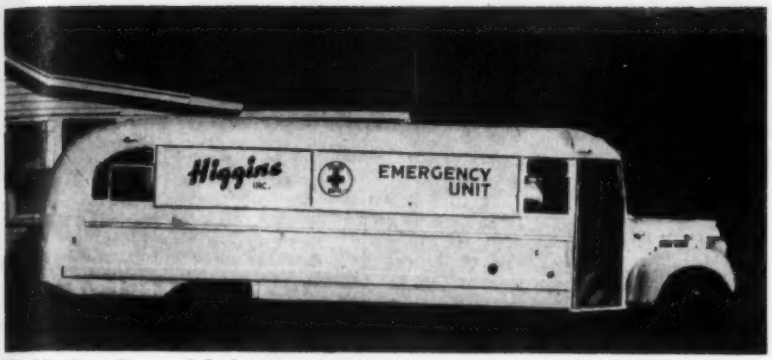
Alarm was reported at 5:10 a.m. and the response brought Engines 3, 23, and 28; Truck 3 and 28; Salvage 28; and Squad 23; plus Battalion 1 and Division 3.

—CLIFF DEKTAR

Air Pilot Spots Fire, Sounds Alarm

An Eastern Airlines pilot, Capt. William R. Call, radioed an alarm of fire through the airlines dispatcher to the Rhode Island state police on Oct. 28th last. Flying over Cumberland, R. I., he saw the fire in the gymnasium of Mount St. Rita's Academy, and his radio did the rest. More than 100 nuns and novices were aroused following discovery of the $40,000 blaze.

Droplets of the fog discharge pattern are picked up by a "curtain" or grid of special glass containers made of surplus boiler gauges calibrated, at the top end of which is a rubber open nipple, facing the discharge, and at the bottom a rubber stopper for emptying contents. The "pick-up" of each tube is measured, then plotted on paper.



This Higgins unit, one of the largest maintained by any industrial plant in the country, responds with its vast array of rescue and first aid facilities along with plant fire apparatus to all fire calls as well as to special emergencies.

Industry Increases Use of Breathing Apparatus

Reports from industrial safety engineers and fire chiefs, substantiated by manufacturers of respiratory protective equipment indicate ever-increasing use of breathing apparatus both for fire suppression, and as protection against toxic and noxious fumes and gases, in industrial fields.

From Leon J. Baker, Safety Director, Higgins, Inc., New Orelans, La., one of the nation's largest boat builders, comes further evidence to support the above reports. "During the past three years," said Mr. Baker, "we have had numerous occasions in our shipyard where fire loss in boats under construction and repair would have been extremely large had it not been for the two pieces of breathing apparatus which we carry in our emergency unit.

"This emergency outfit is a large bus, converted into a unit which carries all of our first aid and rescue equipment, together with additional fire hose, extinguishers, and numerous pieces of fire fighting equipment. The vehicle answers all calls along with the plant fire apparatus."

According to Mr. Baker, the breathing apparatus has enabled the emergency crews to enter smoke-filled boats, locate the seat of the fire and quickly extinguish it. Although the city fire department is only six to eight minutes away, he states, and they are called for each fire, many of the plant's boat fires would have been extensive by the time of their arrival because of inaccessibility due to smoke, but with Higgins' own trained men and equipment serious loss was averted.

Mr. Baker brought out the added fact that Higgins has had numerous occasions to use breathing equipment to locate fumes in boats, caused by burning certain types of material, such as plastics. He cited a case last September where quick work by the safety and first-aid crews of the yard was instrumental in saving the lives of five men who were overcome by fumes from a mastic flooring preparation in the hold of a minesweeper at the company's plant on Industrial canal.

Four of the victims were pulled from the hold of the USS Fidelity by the safety crew headed by Baker and Edward Gussman, assistant safety director. The fifth victim was helped from the hold by an electrician. Four of the men were hospitalized after being given artificial respiration. They at first appeared to have suffered second or third degree burns but their appearance was due to the covering of the flooring preparation that stuck to the men's bodies. There were actually no burns.

According to Baker, the men were in the hold, about 10 by 10 by 8 feet with a 24-inch square opening at the top. It is believed a five-gallon can of the mastic apparently overturned while the men were working on the floor. The men who were affected by the fumes were discovered some time later by a plant foreman who managed to get into the hold and assist one man out before he was nearly overcome himself. Baker and Gussman donned the breathing apparatus and entered the hold, where four men were found lying face downward, partially covered with the mastic material. This evidently had consumed all the oxygen in the hold space, there being no way for air to enter except through the small opening.

Safety and fire control men at this plant have no fear in wearing breathing equipment, according to Baker, but they must be thoroughly and confidently trained if confidence and efficiency is expected of them.

Volunteers Make Home Inspections

The Mount Vernon Fire Prevention Bureau, Alexandria, Va., recently demonstrated how to reduce fire losses in a community of high property valuation when they displayed fire protection apparatus for home use to officials of sixteen visiting Fire Departments and explained their unique inspection system.

In carrying out this unique program, every home owner in the Mount Vernon area was queried as to his desire for a confidential fire inspection of his premises. The overwhelming response nearly staggered the small volunteer group, but inspections and recommendations for corrective action to eliminate hazards are proceeding rapidly. The cooperation of home owners is willingly given, and no home owner has refused an inspection, nor has there been a house fire in the past three months.

The Bureau, formed as an agency of the Mount Vernon Volunteer Fire Department, is staffed by a select group of qualified experts in the field of fire detection. Bureau Chief Ryder has had 11 years as a professional fireman in the City of Alexandria, Va., and 11 years in his present position as a fireman for the U.S. Army. Inspector Poole joined from the local department after 12 years as a volunteer fireman, while Inspector Wilson, a Federal officer and trained investigator, was a former director of the Counter Intelligence Corps and holds a U.S. Coast Guard marine license which qualifies him on marine fire prevention practices. Inspector Lyons also joined the Bureau from the local Department.

This type of volunteer fire department activity is highly recommended as the best means to reduce property loss and high insurance rates.—W. H. Wilson

The Ladder Was a Derrick

Brooklyn, N. Y., fire fighters had their hands full, literally and figuratively, on Dec. 7, last, when they rescued an unconscious, 250-pound, 62-year-old grandmother from a flame-filled Brooklyn brownstone dwelling in 16 degree temperature.

They hurdled the difficulties by lashing the victim to an aerial ladder, well extended, and lowering her down, derrick-wise, four flights, none the worse for wear. They also rescued her two-year-old grandson, over whose body she had dropped when consciousness left her.

The fire, of undetermined origin, started about 2:00 A.M. in the lower levels of the old building at 588 Greene Street, from where it roared upward to

(*Continued from page* 85)

Technical staff of Mt. Vernon Fire Prevention Bureau pose in front of Fire Prevention Display. Left to right: Inspectors Harry Lyons and Ashby Poole; Bureau Chief Roger Ryder; Farfax County, Va., Fire Marshal Willis H. Burton, and Inspector W. Wilson.

BIG OIL TERMINAL THREATENED BY FIRE AT MEMPHIS, TENN.

Fire Fighting Forces Bring Blaze Under Control after Stubborn Battle

A BLAZE touched off by a series of violent explosions ripped through 10 river barges loaded with millions of gallons of gasoline on Oct. 2, last, at the Esso Standard Oil Company's river terminal in Memphis, Tenn. It was characterized by Fire Chief John Klinck as the worst fire of its kind in the 25 years he had been in the Department.

The first explosion occurred shortly before 12:30 P.M. from an undetermined cause, on one of 10 barges loaded with 102,000 barrels of aviation gasoline, diesel fuel and cleaning compounds, which were at the foot of Wisconsin street on the Mississippi River.

About half the 4,284,000-gallon cargo had been unloaded when an explosion occurred without warning. The unloading process involved pumping the fuel from the barges through pipelines which run up a river bluff to 18 storage tanks. The alertness of a terminal employe, who narrowly escaped with his life, in turning valves on pipelines and halting a flow of fuel to the storage tanks, is said to have prevented fire from reaching the tanks.

Four men were working on the barges, which were tied up two abreast, when the first blast came, followed by a flash of fire. The towboat Esso Louisiana, which had brought in the tow, was cut loose just in time to escape the onrushing fire, spurred by additional explosions which shook the entire area, until nearly 4:30 P.M.

For a time the entire terminal covering 25 acres was threatened, but firemen, converging on the scene from three alarms, managed to contain the blaze even though the intense heat kept them at a distance. Firefighters concentrated on playing water and foam streams along the river bluff and on the fill and discharge pipes to keep down the heat. The fire burned about 400 feet up the bluff and along a wide section of the riverfront, involving the dock.

Firemen hooked up lines to foam hydrants maintained in the terminal and drew on two large tanks of foam chemicals kept in the terminal by Esso. Each tank contained 68,000 gallons of foam chemicals. At the outset, the fire could not be fought from the waterside, but three hours after the blaze began, firemen succeeded in getting a pumper and deluge truck on a barge and this was put into standby service a few yards from the bank.

When the heat partially ruptured one of two pipes used to carry high octane gasoline to terminal storages, and fuel leaked from it, fire fighters played a steady spray of water fog on the area to dissipate the vapors and cool the pipes. They were handicapped somewhat by the fact that the original blast blew a cap off a water line leading to the dock from the terminal, which caused water pressure to drop in the vicinity before the cap was replaced. Firemen were forced to stretch hose lines as far as three blocks.

Two final explosions at 4:23 P.M. caused spectators and firemen to fall to the ground and retreat from the area. But fire fighters returned and kept foam and fog lines on the blaze, and on exposures, all through the day and night. Some 175 men answered the three alarms. Over sixty firemen remained on the scene next day, many of whom suffered from heat and exhaustion. Meanwhile the vast cloud of smoke, the broadcasting of the emergency, and the movement of fire apparatus through the city brought large crowds to the area.

One man was missing and presumed dead. Of the three injured, one, a fireman, Captain W. B. Perry, was critically hurt when the car in which he was traveling on the recall to the quarters of Engine 7 for fire duty collided with an ambulance which was conveying another injured fireman, Marvin T. Pickett, to the hospital, after he had been overcome by smoke. Fireman Robert Adams, who was driving Captain Perry's car, also received injuries in the collision.

The three alarms brought all off-shift firemen into action and caused movement of nearly all the city's fire forces. On the first alarm (12:23 P.M.), ladder and pumper companies from three stations, with the fire patrol (salvage squad and rescue unit) responded. The south district chief and deputy chief from headquarters also rolled.

The second alarm (12:26 P.M.) brought into action companies from four stations and a fire patrol, with Fire Chief John Klinck, the north district chief and about six other district and deputy chiefs. Equipment moved in to cover from six outlying stations.

On the third alarm (12:29 P.M.), apparatus and men from five more stations responded, while forces from seven other stations were dispatched to cover in empty quarters. The telephone, television and radio were all used to summon off-duty personnel.

Early on the morning of the 3rd, four burning barges broke away from their moorings and floated down river, pursued by a towboat with empty barges from the U. S. Corps of Engineers, in an effort to force the blazing inferno shorewards.

Property loss was variously estimated as high as $2½ million.

Memphis oil terminal fire at its height

A Jolt for the Thrill-Seekers!

Down Monroe, Ga.-way, Mayor G. B. Hammond and the City Council are fed up with curiosity-crazed motorists who chase the fire apparatus when it is responding to calls.

City firemen have been instructed to take the names and licenses of citizens they believe guilty of the practice and turn them over to the Police for prosecution.

The Police Chief, H. L. Mike Jones, is doing his share by publishing the city ordinance against outside interference with the fire department and, right alongside of the proclamation, a declaration that "cases will be made against all those violating this ordinance. No exceptions will be made and no excuses or alibis accepted."

The action has the support of the local paper which warns its readers of stiff penalties.

L. A. Firemen Turn Detectives

Truck 10 of the Los Angeles Fire Department had an unusual assignment on Christmas morning.

The truck was called by police to a parking lot near 18th and Hill Sts. where the brutally beaten body of a woman had been found.

Ladders were raised to roofs of adjoining buildings and firemen and detectives searched unsuccessfully for the murder weapon.

—CLIFF DEKTAR

Fast Work by Firemen Cut Fatalities

One of those typically New York tenement fires, which spread swiftly through adjoining five-story buildings at 214-216 W. 78th Street, brought death to one man and injuries to four other persons on Nov. 9th last. Only the effective work of firefighters responding on two swift-spaced alarms prevented further fatalities.

When the first-due units pulled up, tenants were leaning out smoke-filled windows preparing to jump. As ladders were thrown up, one mother in the building at 216, dropped her infant into the arms of another tenant who had already escaped. Other tenants leaped from windows in the rear, one woman suffering spine and pelvis fractures when she jumped from the fourth floor. Another woman who lived on the third floor and is seven months pregnant, was cut when she tried to break a window to escape flames. Two other tenants, helped down ladders by firemen were treated for smoke poisoning.

The fire originated on the first floor between the stairs of the two buildings, raced up the stairs and mushroomed on the upper floors. It was discovered about 2:50 P.M. by a 19-year-old tenant on the first floor.

The fire victim whose name was not disclosed, was found over an hour after the start of the blaze in a top-floor bathroom. Fire Commissioner Edward F. Cavanaugh, Jr., who has personally been conducting a drive to reduce the mounting number of serious tenement fires in the city, was at the scene. Chief Fire Marshal Martin Scott investigated the cause of the blaze.

This, and a long record of other fatal tenement fires in New York, have impelled Commisioner Cavanaugh and fire officials to adopt a "get tough" policy with landlords who consistently permit violations of fire safety codes to exist. Under recently enacted State laws, multiple dwellings must adopt stringent measures for protecting tenants. New York City also has ordinances which due to complications of enforcement were never fully carried out, but which will now be pushed to the letter, it is said.

Fast laddering by fire fighters save many

Top left: Driven from smoke-filled building to third floor ledge at 214 W. 78th Street, Manhattan, this tenant, and others crowding windows, wait for rescue. Top right: Just in time, wall ladder has been thrown against building as imperiled tenant gropes with his feet for footing. A woman tenant, left, on tiny balcony, is right after him, while at upper right a family of man, woman and two children call for help. Bottom left: Safely down to lower floor ledge, rescued man helps raise ladder to gain all possible footage and holds it while woman starts descent. Laddermen, not shown in this shot, are throwing up aerial to reach other endangered tenants. Bottom right: Family of four, shown in previous pictures, saved just before room from which they fled burst into flame. Two firemen aid man and woman down ladder while other firemen carry children.

Portland Opens Modern Station

The latest Portland, Ore., fire station was dedicated last summer with fitting ceremonies, to house Engine Company 32. It is located in the St. John's area and incorporates many practical functional ideas as well as the last word in modern architecture.

The building was started in December, 1953, and completed in June at a cost of $100,000. The builder was the C. M. Corkum Company, and the architect was Holman J. Barnes, A.I.A., both firms of Portland.

The apparatus room is planned as a nucleus around which the entire station functions. It is easily and quickly accessible from any other room in the building. The location of the watch-room assures control over the apparatus floor, the public entrance to the structure, and at the same time affords a controlling sight of the kitchen and recreation room.

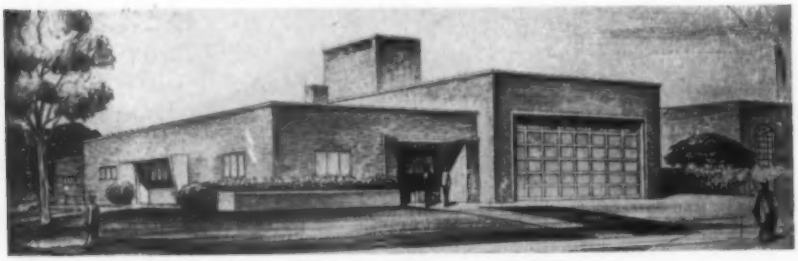
An extra large hose tower is included in order to provide extra hose storage in the outlying area as a necessary adjunct to civil defense planning. Other companies may be serviced from this storage without interference with the station's normal operations.

The building itself is of reinforced concrete with brick veneer used as facing material. Aluminum sash is used throughout. The steel roof deck is supported by long span steel joists covered with rigid insulation and a built-up roof. Glass block clerestory lighting lets light into the interior side of the apparatus room, which has concrete floors, ceramic tile wainscot and metal lath and plaster walls and ceiling.

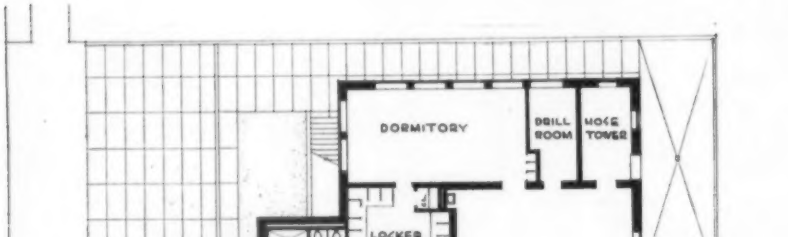
The toilet rooms and showers have glazed structural unit walls and ceramic tile floors. The locker room has asphalt tile floors, "Kalistron" wainscots and accoustical tile ceilings.

The heating is supplied by a hot water system with coils in the floor of the apparatus room and convectors and finned pipes in the remainder of the building.

The Station shows painstaking thought in planning and construction. In this, chief Edward Grenfell had the collaboration of Superintendent of Buildings A. A. Alwick, and others of his staff.



Architect's sketch of new fire station for Portland.



Ground floor plan of Portland's new fire station.

Airman and Fire Fighter Honored by Britain

A United States serviceman and a British fireman have both been decorated at London for their brave but unavailing efforts to save a child, the small daughter of another American serviceman, in a fire.

They are Master Sgt. S. Sneed (USAF) and Fireman J. F. Cassidy of the Middlesex County Fire Service at Hayes who at a double ceremony at West Drayton R.A.F. Station, occupied by the U.S.A.F., were both presented with the Bronze Medal of the Society for the Protection of Life from Fire.

Police Chief Superintendent T. E. Mahir, himself a holder of the George Medal, presenting the medals said "The unusual recognition given each man was made as a result of their extreme heroism under adverse condition in which they risked their lives."

Supt. Mahir added that they both displayed "courage of the highest order with no thought for their personal safety. Both have lived up to and indeed enhanced the finest traditions of the British Fire Service and the United States Air Force."

When the child was trapped in her blazing home, where she was in the care of a children's nurse while her parents were out, Sgt. Sneed was called from his home nearby and made four attempts to enter the room, but was driven back by heat and flames. Fireman Cassidy was testing fire alarms when he was told of the fire. He was able to reach the child eventually and carry her from the room, but she had sustained severe burns and died before reaching hospital.

Both Sgt. Sneed and Fireman Cassidy had previously been commended by Her Majesty's Coroner at the inquest and Fireman Cassidy has also been awarded a Commendation by Queen Elizabeth.—H. Leslie Taylor.

Fire Levels Old Landmark

Fire of undetermined origin destroyed Thompson Hill Manor, Thompson, Conn., on Dec. 2. The loss was estimated at $100,000. Fire Chief James Elliott, of Thompson, said that nine volunteer fire departments battled the blaze for several hours, but were unable to save the old structure, a landmark in that town.

Firemen were forced to lay hose lines to a pond situated a mile away from the hotel. Only one guest was reportedly staying at the hotel and restaurant when the blaze broke out at 1:30 A.M. and quickly worked its way through the entire structure.

Firemen, however, were able to save three refrigerators, an organ valued at $1,300, and other items of furniture on the first floor. Manager Charles Lang said that the year-round structure was recently renovated. Up to 15 years ago the building was the Howe-Marot School, an exclusive school for girls.

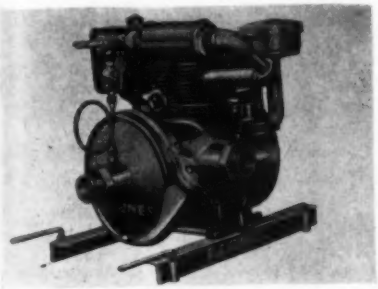
Prior to that it was part of the Doane estate and considered one of the showplaces of the town. Firemen and apparatus from the nearby towns of Putnam, Dayville, East Woodstock, Brooklyn and Hampton responded to calls for assistance. Tom Magner

News of the Manufacturers

New Barnes Fire Fighter Pump

A new light weight pump with a cast aluminum body, especially designed for fire fighting use, has been announced by Barnes Manufacturing Co., Mansfield, Ohio, and Oakland, California.

This new fire fighting pump, the manufacturers state, has excellent pressure characteristics for stand-by fire protection or for direct fire fighting, and also fills all the requirements as an auxiliary pump for truck pumpers and reserve tank trucks.



Barnes portable fire pump.

Four swing carrying handles, which lock in two positions, make the unit mobile and easily carried by two men.

Powered by a Briggs & Stratton Model 23FB 8¼ hp single cylinder air cooled engine, the Barnes unit will deliver 100 gallons per minute at 140 ft. (60 lbs.). At 208 ft. (90 lbs.) it will deliver 50 gallons per minute. It has 2" suction and discharge with 2½" N.S.T. threaded adapter connections. The pump is exhaust primed for quick priming at all normal suction lifts.

The pump is of the single stage centrifugal type, close coupled to the engine with rabbet fit bracket. An all bronze enclosed type impeller is standard. The Pump is equipped with a compound gauge to check suction and discharge conditions.

The unit is also produced mounted on pneumatic tires.

Homelite Promotes Two

J. A. Abbott, President of the Homelite Corporation, Port Chester, N. Y., has announced the election of Richard C. McDonald as Vice President in Charge of Manufacturing, and Albert K. Newman as Vice President in Charge of Engineering.

Mr. McDonald is a graduate of Michigan State College and was formerly associated with the Ford Motor Company's manufacturing division. He joined Homelite as a salesman in 1937, was made manager of the Chicago sales office in 1939 and transferred to the engineering department in 1941. Two years later he became Assistant Factory Manager, and was appointed Homelite's Factory Manager in 1946.

Mr. Newman has been Homelite's Chief Engineer since 1948. He attended Washington and Lee University in Lexington, Virginia, and holds a Bachelor's and Master's degree in Electrical Engineering from Massachusetts Institute of Technology. In 1942, Mr. Newman joined the Homelite Corporation as a project engineer after sixteen years as design engineer with the Electric Specialty Company of Stamford.

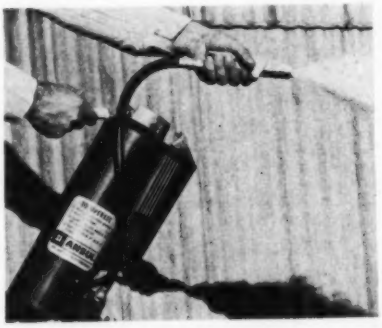
Both men are well-known for their active participation in professional societies.

Modern Styling Invades Extinguisher Field

A new streamlined fire extinguisher, styled by Raymond Loewy Associates and said by its manufacturer to be the most rugged and easy-to-use unit ever put out in the fire protection field, is being introduced by Ansul Chemical Company, of Marinette, Wis., pioneer producer of dry chemical fire equipment.

Designed primarily for industrial use, the new unit is capable of expelling 10 pounds of dry chemical. Its overall weight of 22 pounds and simplicity of operation by inexperienced personnel makes it suitable for use by housewives against fires in the home, the manufacturer states.

According to the manufacturer, the new Ansul 10 answers a need for an extinguisher with a capacity between the company's four-pound and 20-pound capacity models. This need has been especially felt in the transportation industries, such as trucking and bus transportation.



Modern styled dry chemical.

Loewy designers eliminated the ring-pin on the extinguisher. The user now merely applies additional hand pressure to puncture the CO_2 pressure cartridge that activates the extinguisher.

Other design changes include a new-style fill cap that is most effective in keeping moisture out of the extinguisher shell; a more practical and functional carrying handle, and a new easy-to-operate, squeezable nozzle.

Midwestern Changes Name

The Midwestern Mfg. Co. of Mackinaw, Ill., well-known makers of firemen's safety apparel widely used in the fire service, has changed its name to Midwestern Safety Mfg. Co.

The Midwestern line includes firemen's coats of various types, special bunker pants, helmets and other apparel, all described in a catalog available for the asking.

Fire-Lite Introduces Approved Alarm System

A complete new fire alarm system, bearing Underwriters' approval has been announced by Fire-Lite Alarms, Inc., 190 Fulton Terrace, New Haven, Conn.

The product is said to be one of the first such systems sold in the low price range having Underwriters' approval. The system comprises various types of control panels with the automatic Fire-Lite detectors, break glass stations, and necessary alarm bell for a complete installation.

The system is built to comply with the recently enacted compulsory New York State Multiple Residence Law, and to meet the safety laws in other states.

A colorful folder containing complete details may be had upon application.

Cumberland Hose Gets New Ambulances

Among the fire companies of Pennsylvania that operate ambulance service in a big way is the Cumberland Valley Hose Company, Shippensburg.

This enterprising unit has been outstanding in this field for twenty years. During this time it has made fourteen purchases of ambulances of Superior Coach Corporation, Lima, Ohio.

Recently the Hose Company acquired twin two-tone, Limousine-styled Superiors, mounted on Cadillac chassis. The transaction was handled by Harry A. Wolfington, President of the Wolfington Body Company, Inc., Philadelphia, Pa.

(*Continued on page 66*)

Two new ambulances recently delivered to Cumberland Valley Hose Company, Shippensburg, Pa.

FALSE ALARMS

A Riddle

Four old maiden ladies went to a World Series game equipped with a bottle of "spirits" to quench their thirst. During what inning did they finish the bottle and how many players were on base?

It was the end of the fifth and the bags were loaded.

Embarrassing

Two old friends renewed acquaintances at a convention after 20 years. One asked, "How's your wife?"

The other replied, "My wife is in Heaven."

The first one blushed and blurted out, "Oh, I'm sorry." Then he quickly realized that was not the proper thing to say, so he changed it to "I mean I'm glad." And that was even worse.

At wit's end he weakly muttered, "Well, I'm surprised."

First six-year-old: "My daddy is an Eagle, a Moose, an Elk, and a Lion."

Second six-year-old: "Oh, yeah! How much does it cost to see him?"

Provisions

Six contractors on a fishing trip ran out of provisions and sent one of the party to a nearby town to shop. He returned with six bottles of wine, a case of beer, a bottle of whiskey, and a loaf of bread.

One of the group was heard to exclaim: "Good boy! You've even brought something for the birds."

A Negro spinster of uncertain years decided at long last to join the Baptist Church. As the deacons plunged her into the river the first time she gasped, "I believe." The second time she chattered, "I believe." A third time, gulping for air, she sputtered, "I believe." One of the elders interposed. "You believe what, sister?" She eyed him savagely. "I believe you stinkers are trying to drown me."

Night Clubs

Wife: "Well, what excuse have you got for coming home at this hour of the night?"

Husband: "Well, you see, honey, I was playing golf with some friends and . . ."

Wife: "What! At 2 a.m.?"

Husband: "Sure. We were using night clubs."

Education

A school teacher told her pupils to listen to their parents' conversation and if they heard a new word, to look up its meaning in the dictionary and write a sentence using the word properly.

The next day she asked Johnnie what new word he had learned. He replied that he had heard the word "pregnant," which the dictionary defined as "to carry a child."

The teacher calmly asked, "Have you a sentence in which you have used the word?"

"Yes, Ma'am," he replied. "The fireman climbed the ladder into the burning house and came down pregnant."

"West Virginia, Wisconsin, Wyoming and Butch. Guess they're all out now!"

"I pulls a vacuum an' right off he sez, 'usin' your empty head as usual, I see.' So, I bopped him!"

Mountaineer: "Doc, I want you to look at my son-in-law. I shot him yesterday."

Doctor: "Shame on you, shooting your son-in-law."

Mountaineer: "Huh! He wasn't my son-in-law when I shot him."

Bus Driver: "All right back there?"

Female Voice: "No, wait till I get my clothes on."

Three people were injured in the rush to see a girl get on the bus with a bundle of laundry!

Invitation

One of our eager-beaver sales reps arrived at a small town hotel one night recently, ready to conduct a road machinery demonstration at a nearby project the next morning. Driving rain storms kept him marooned in his room for two days and nights, however, and he became quite bored.

To relieve the tedium, he opened the Gideon Bible on his dresser. Pasted on the inside cover was a sheet which said, "If you are lonely and discouraged, read Psalms 23 and 27."

He turned to the 23rd Psalm and read it through. Turning to the 27th Psalm, he noticed a pencilled note in the margin, written in a neat feminine hand.

"If you are still lonely," it said, "phone 1864."

A cute gal elevator operator, exposed for the umteenth time to the remark, "I suppose you have your ups and downs," snapped back, "It's not the ups and downs that bother me. It's the jerks!"

Definition of a bachelor: A man, who, when he hears the patter of little feet in the middle of the night, gets up and sets a mousetrap.

Here's to the chigger with a head no bigger than the point of a tiny pin, but the welt he raises hurts, like blazes—and that's where the rub comes in.

Stronger, lighter and easier to handle

EUREKA
Multiple-Woven
with Dacron Construction

Any fire chief knows that a heavy, writhing fire hose under pressure is as dangerous as a boa constrictor on the loose. That's why strength, lightness and flexibility in a fire hose are so important. These are the big features of Eureka Multiple-Woven with its special Dacron* filler yarn. It's the best all-purpose fire hose made, and can be furnished wax and gum treated, if desired.

Eureka Multiple-Woven is made on special looms so that all plies are interwoven. Water and dirt cannot collect to weigh down and cause excessive wear. Its smooth interior filler ply reduces hydraulic friction, allows for maximum nozzle pressure.

Another big feature of Eureka is its long-range economy. It far outlasts cheaper hose, cutting costs per year in half. And with that saving goes far better performance and greater safety.

*Du Pont's polyester fiber

"For greater protection to life and property"

EUREKA FIRE HOSE

Since 1875, Specialists in Manufacturing Circular-Woven Rubber-Lined Fire Hose

195 Hudson Street • New York 13, New York • *Division of United States Rubber Company*

YOU GET—

Greater Protection
More Freedom of Movement

in ISSCO's new aluminized asbestos turnout coat

Here's a turnout coat that's light, pliable, heat-reflecting, and water repellent as well. This new ISSCO coat is far less cumbersome on a ladder; far more effective up close to a fire where its highly polished aluminized surface (not mere foil) reflects most of the heat. Coat has wristlets sewn into sleeves, is wool lined to the waist (for winter comfort), and fastens with big easy-to-manage snap hooks.

CLIP COUPON BELOW FOR FREE BROCHURE

when heat is intense

Use ISSCO's heat-reflecting aluminized asbestos hood and gloves. Gives you that extra protection around face and hands in approaching fire and in flash-backs. Hood has built-in helmet—adjustable to size: ¼" laminated safety glass window. Gloves shown are ISSCO 114-AL (One of many styles we furnish).

INDUSTRIAL SAFETY SPECIALTIES COMPANY

8th and Chestnut Sts., Perkasie, Pennsylvania

Manufacturers of

The ISSCO Insulated Fire Rescue Suit

Asbestos blankets in all sizes

Protective clothing for every situation!

Industrial Safety Specialties Co.
8th & Chestnut Sts., Perkasie, Pa.

Gentlemen:
Please send me your new folder describing aluminized asbestos protective clothing

Name _____

Organization _____

Address _____

The ROUND TABLE

For Practical Discussion of Current Fire Department and Fire Management Problems

MOST FIRE DEPARTMENTS DO SALVAGE WORK

THE discussion in this Round Table is a continuation of that which appeared in the December issue on salvage operations of fire departments.

The generous response from our readers make it necessary to carry the discussion over to this issue and the February issue as well.

Readers are invited to send in their comments on this subject which is described in a box on this page. Address replies to Round Table Editor, FIRE ENGINEERING, 24 West 40th Street, New York 18, N. Y.

Discussion of the Topic

I. D. Merrick, Chief, Poughkeepsie, N. Y.: Salvage work is a regular function of this department, except that we are sometimes hampered by lack of manpower in performing it quickly enough to be fully effective.

We carry 15 covers on each of the two ladder trucks and 10 covers on the emergency truck.

Besides reducing the water loss at a fire, salvage operations play an important part in good public relations for your department. Along with spreading covers, we carry rolls of tar paper, squeegees, water absorbent powder and other salvage tools. These we use very effectively after most fires.

All holes in roofs, open windows and doors are covered with tar paper. The fire area debris is cleaned up and taken out of the building. Any excess water is removed from the floors as quickly as possible and the absorbent powder is spread on them to thoroughly dry the floors before we leave.

We have found that if we can reduce the damage to the property owner regardless of whether he is insured or not, if we can clean up the results of the fire operation and try to give him back his property in as good a condition as possible, then we have accomplished much towards good public relations.

Phil C. Pifer, Chief Engineer, Bakersfield, Calif.: Our department performs salvage operations at all fires as routine procedure if such action is indicated.

Salvage covers are carried on all apparatus, in service and in reserve, with the exception of pumpers assigned to response in the high value district which other equipment, with an adequate supply of covers, would cover on first-in response.

The number of covers carried on apparatus is as follows: Truck 1, 15; Truck 2, 8; Squad 1, 7; Squad 2, 9; Squad 3, 7; Engine 2, 2; Engine 4, 4; Engine 5, 2; Engine 7, 2, and Reserve Engine, 4.

The benefits of salvage work are numerous. However, we feel the most outstanding are:

1. Our records show that in the early days of the department, water damage was often as great or even in excess of fire damage. Under present policy, water damage is reduced to a minimum.
2. The continued protection afforded by the efficient use of salvage covers may contribute to a possible reduction in insurance rates.
3. The use of salvage covers by the department has proved to be one of the department's greatest assets in the field of public relations.

The following salvage operations are performed in addition to the spreading of covers:

1. Covers are used as "catch-alls" and water drain chutes.
2. Canvas hall runners and covers are used for the protection of floors, rugs and carpets.
3. In addition to covers, the aerial trucks carry tar paper to be used for temporary covering for holes in roofs for protection against the weather pending permanent repairs.
4. Sawdust is used to control water drainage.

Clyde L. Peterson, Chief, Ogden, Utah: This department operates a salvage truck which responds to all building fires.

All engine companies and truck

HERE ARE THE QUESTIONS

1. **Does your department perform salvage work at fires as a regular activity?**
2. **Which apparatus carries the covers; (a) pumpers; (b) ladder trucks; (c) other units?**
3. **How many covers are carried on each unit?**
4. **What benefits do you believe result from salvage operations to: (1) property owners; (2) fire department; (3) public in general?**
5. **What other salvage operations are performed in addition to spreading covers?**

Reduce The Fight In Fire Fighting With This Light Dacron Hose

Answering fire alarms is hard work and every man's strength must be saved to help combat danger on the job. Strength-sapping lugging of heavy fire hose is done away with when Dacron hose is used.

In spite of its light weight and easy flexibility which makes it so easy to handle, this hose is actually stronger than conventional hose, and withstands 50% greater pressure. It also resists damage by heat, chemicals, water absorption, mildew and abrasion.

Non-porous rubber tube with jackets of highest grade cotton warp thread, combined with filler thread of super-strong, quick drying Dacron, give this hose its remarkable qualities.

Its unique construction makes it easier to coil and it takes up less truck-bed space.

Our Delaware-Victor brand is rated for 600 pounds and our Bond-Battleship brand for 400 pounds. Both are factory tested under severe hydrostatic pressures far more rugged than the most severe use they would get in action.

We also manufacture a complete line of water and chemical fire hose for every municipal and industrial requirement. *Write for free folder and name of nearest distributor.*

QUAKER RUBBER CORPORATION
Philadelphia 24, Pennsylvania

HKP

QUAKER PIONEER RUBBER MILLS
San Francisco 7, California

companies carry salvage covers along with the salvage truck.

Engine companies and truck companies carry a minimum of two 14 x 18-inch covers. The salvage truck carries 18 covers of various sizes.

Thousands of dollars' worth of property is saved the owners each year along with holding the inconvenience and upset of having a fire to a minimum.

The Fire Department is looked upon by the general public as a well trained and highly efficient organization which in turn helps the department maintain a high level of public relations. The salvage operation also helps considerably to keep the fire losses down.

Good and effective salvage operations build up pride and trust for the fire department and create a feeling of being well taken care of.

This department goes all out in salvage work. In addition to spreading covers, we make emergency repairs to protect property from the elements; we remove all water from buildings through the use of pumps, sawdust, mops, sponges, squeegees, etc. Where possible all debris is removed to the outside of the building. Smoke ejectors are used as soon as possible on all building fires to remove smoke and gases. Where conditions warrant, deodorizers are put into operation to combat the odors that are always present when fires occur. Canvas runners are also spread to protect the floors and floor coverings when conditions warrant their use. A vacuum cleaner is also carried on the salvage unit and is used to clean floors and floor coverings. It has been very e fective in holding the damage to r and carpets to a minimum.

V. C. Brightman, Chief, Kingston, On Our department carries four cove on each pumper and fifteen on ea ladder truck.

Good salvage operations result protection to furniture and mercha dise and reduced loss due to wat which, in turn, helps to keep insuran rates down.

In addition to spreading covers, w pump out basements and clear wat from floors to prevent collapse structural damage.

A. McC. Marsh, Chief, Columbia, S. C. Salvage work was first put into opera tion in 1924, and has been carried o continuously since that time.

Each ladder truck carries 15 cover pumpers two each and the emergenc truck, three.

Benefits resulting from salvage wor include:

1. The protection of personal prop erty, stock and equipment from dam age by water, smoke, heat and fallin debris.

2. The reduction of the over-al fire loss which results in the depart ment's increased efficiency.

3. The service rendered to the pub lic in times of emergency. By having good salvage work along with an effi cient fire department, fire insurance rates will be reduced.

In addition to spreading covers, w remove debris and water, mop and dr floors and separate damaged content from undamaged. We also secure th building to prevent unauthorized per sons from entering.

Use of salvage covers at a furniture store fire in Columbia, S. C. Fire originated on secon floor of a two-story building and was confined there.

BRAXMAR

GREATEST NAME IN

BADGES

SERVING THE FIRE FIELD

Since 1879

Firemen the world over rely on Braxmar for the finest badges money can buy. We offer the widest possible selection in nickel, chrome plate, sterling silver, gold plate, rolled gold and solid gold; all of our badges and insignia are the work of experts with a lifetime of service.

Write for latest catalog and price list.

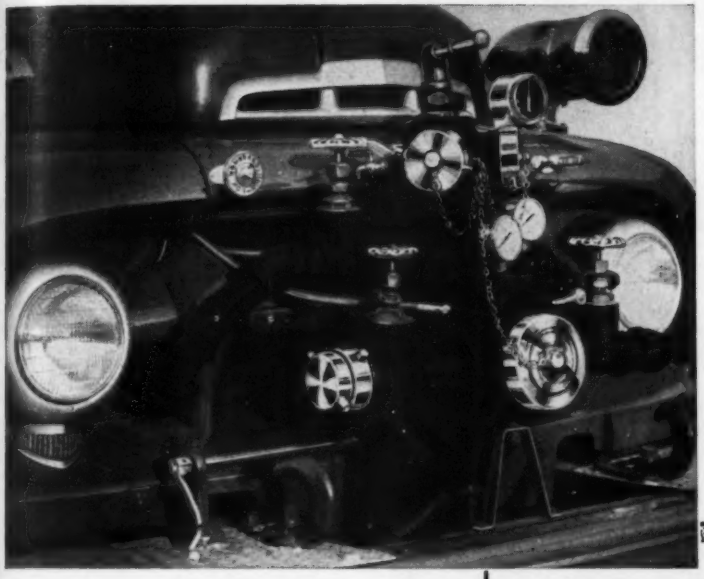
Dealer inquiries invited.

THE C. G. BRAXMAR CO., Inc.

JOHN O. VEIT, *President* — JOHN O. VEIT, JR., *Secretary-Treasurer*

216 E. 45th Street, New York 17, N. Y.

FROST-PROOF DESIGN



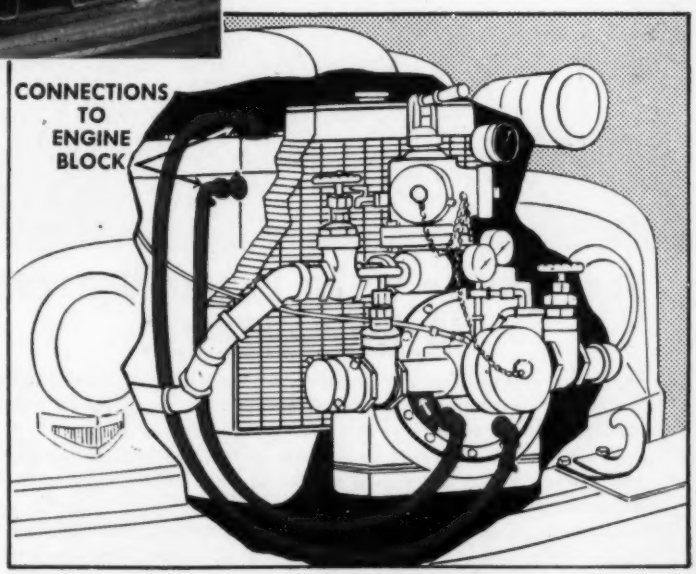
of Barton-American Type UA Front Mounted Fire Pump gives extra safety factor for winter operation

You *never* have to worry about your Barton-American Type UA Pump freezing! For this unique, effective *frost-proof design* gives you positive operation even in the coldest weather!

Water at engine temperature constantly circulates from engine cooling system through the cored suction head of the UA Pump. Even at sub-zero temperatures, this always keeps the pump well above the freezing point.

It's a closed system with no possible loss of radiator water or anti-freeze . . . operating on the same principle as a car heater.

In addition this feature of the UA Pump increases the summer cooling capacity of the system . . . gives you a cooler engine in hot weather as well as positive protection against freezing in cold weather!



Hose line circuit may vary with make of engine.

ONLY THE BARTON-AMERICAN TYPE UA PUMP GIVES YOU *ALL* THESE VALUABLE FEATURES:

- Is Easy to Install
- Fights Fires on the Move
- Gives Pressures to 400 lbs.
- Better Weight Distribution on Truck
- Gives You Unusual Economy
- Lets You Carry More Water or Equipment
- Effective Frost-Proof Design
- Both Volume and High-Pressure Fog Stream
- Positive Non-Slip Clutch

WRITE TODAY FOR UA PUMP BULLETIN NO. 8330-B

AMERICAN-MARSH PUMPS

BATTLE CREEK MICHIGAN

In Canada:
American-Marsh Pumps (Canada) Ltd., Stratford, Ont.

Your Choice of an Engine-Generator IS IMPORTANT

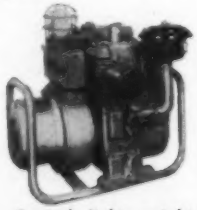
That's why—before you buy *any* engine-generator *you should examine* the models developed by United States Motors Corporation especially for fire fighting, safety and utility.

Each unit rests firmly on a foundation of over 65 years of engineering and manufacturing experience and world-wide installations in fire fighting equipment.

Fast-starting dependability . . . rugged, light-weight construction, complete simplicity—yet wide adaptability as a source of power for lights, electric saws, drills, suction fans, acetelyene cutting and other fire-fighting requirements where dependability is *essential*.

For that "little extra" that can mean "so much," U. S. Units carry a generous "overload capacity."

Check U. S. Motors before buying *any* engine-generators. U. S. builds complete line from 200 watts to 250 KW stationary, mobile or portable, gas, gasoline or diesel fuel. Write for complete details.



Typical light weight, compact 2500 Watt Unit. 300 Models to choose from.

LIGHT US POWER

United States Motors Corporation
420 Nebraska Street Oshkosh, Wis.

W. J. Taylor, Chief, Burbank, Cal.: Our department does salvage work at fires as a part of our regular activities.

A minimum of four salvage covers is carried on all engine companies and a larger complement is carried on the service-rescue and truck companies that respond to all building fires.

Salvage operations can be of substantial benefit to the public and property owners through a reduction of loss due to water damage.

Insurance companies also benefit from salvage operations.

The fire department is in a position to benefit to a great extent by the kindly feeling that property owners have when they see the results of good salvage in connection with fire control.

Through the use of squeegees, mops, buckets, sponges, chamois, floor runners, sawdust, etc., we attempt to control water and debris so that the best protection can be given property at all times.

J. T. Dickens, Chief, Kimberly, B. C.: Salvage operations usually follow the overhauling procedure in our Department and are done whenever possible.

Salvage covers are carried on the pumper; our ½-ton truck carries the remaining salvage equipment, i.e., squeegees, mops, sawdust, etc. We have three large covers at present and are ordering more.

We have found that a good salvage job makes for better relations between the property owner and the department. The fire department personnel feel that they have not fully completed the job unless a thorough cleanup has been made, and they derive satisfaction from this factor.

We find salvage operations are sometimes a surprise to the public, who appear to be well pleased, especially when no insurance is carried and when there is inclement weather.

Water is removed entirely from the building. The building is heated if necessary and furniture, etc., dried. Openings in roofs are covered temporarily as are window openings, etc.

Deodorizing spray is used throughout to "kill" any odor. This is done as soon as possible after the smoke has been pulled from the premises by smoke ejector.

New mercantile buildings, etc., are given attention with view to drainage, scuppers, etc. Merchants are advised in advance of water damage problems in case fire fighting operations are necessary.

W. K. Moore, Chief, Yakima, Wash.: Our department does perform salvage work at fires as a regular part of our operations. We carry salvage covers on all pumpers and ladder trucks. Three covers are carried on each pumper and from twenty-four to thirty covers on ladder trucks.

The chief benefit to the property owner is a reduction in fire and business loss. Lower fire and business loss will ultimately benefit the general public in reduced insurance rates. Salvage work is one of the finest medias available to the fire service to do a job in public relations.

Besides salvage covers we carry brooms, mops, squeegees, sawdust, tarpaper for covering roof areas, sprinkler heads and sprinkler tongs.

E. P. Feaster, Chief, Lincoln, Neb.: Our department does perform salvage work as one of our regular activities. The main salvage covers are carried

on our four ladder companies.

Each unit carries eight salvage covers with most engine companies carrying one for salvage operation.

The main benefit that we derive is the praise of the property owners and insurance adjusters for the care that we give the merchandise and household goods.

As to other salvage operations, our four truck companies carry rolls of tar paper and lath to close broken windows, holes in roofs; tarps are also used for this purpose in case of heavy destruction to roofs. Two portable pumps are used to pump water from basements, sponges and chamois are carried to clean furniture and in some cases floors.

Edward Gall, Sr., Chief, Mount Vernon, N. Y.: Salvage work at fires has been routine duty of this department for some time.

The rescue company carries approximately twelve covers at all times. If additional covers are needed they can be had from reserve supply stored at company station. The members of this department are trained in the use of spreading covers, which results in minimizing the damage to contents from water and overhauling operations. Our files contain many letters of appreciation for this service performed. In addition to spreading covers inside of buildings we also cover openings made in roofs or windows due to ventilating operations.

Charles E. Lane, Chief, Great Falls, Mont.: We do no salvage work at fires. We have two covers on the aerial ladder for other uses. Salvage crews are very effective for protection of merchandise, but we are undermanned, so our men have to fight fires only.

George C. Graham, Chief, Bristol, Conn.: Our department does salvage work at fires insofar as we can with our limited manpower.

Our ladder company carries four salvage covers and our four pumpers carry two each. Two covers are also carried on the emergency truck.

This service saves the property owners water and other damage. It is good fire department public relations and is appreciated by the public.

Other salvage work is done. By careful overhauling and separation of good material from damaged material, we have had many favorable comments from our adjusters.

Frank Briers, Chief, Victoria, B. C.: We do perform salvage work. Ten covers are carried on ladder trucks, six on the aerial and six on a spare ladder truck.

Benefits resulting from this work include the protection of uninsured or irreplaceable articles, lower fire loss and reduced insurance rates due to lower loss.

In addition to spreading covers, we drain water from buildings, cover roofs after fires and protect plate glass.

Dean B. Muhlestein, Chief, Provo, Utah.: All trucks except a special grass fire truck carry salvage covers. Two are carried on each pumper and six on ladder trucks.

The prevention of property damage and better relations between fire department and public result from efficient handling of salvage work at fires.

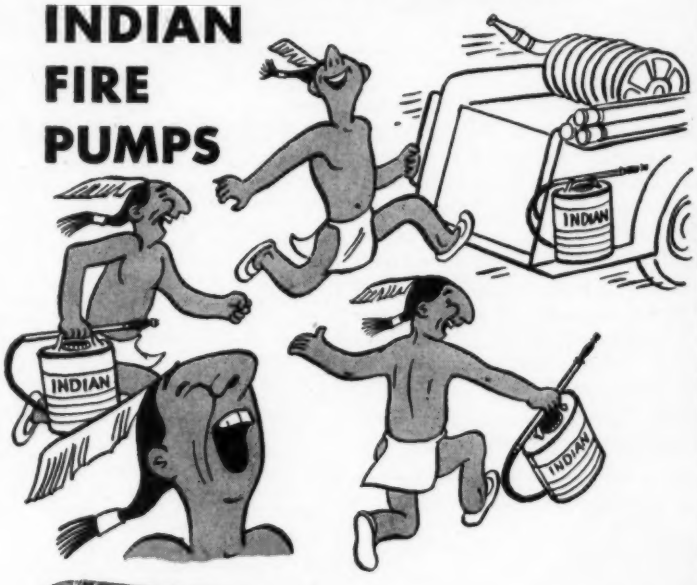
Trucks without

INDIANS

are like ham without eggs!

COMPLETE YOUR EQUIPMENT WITH

INDIAN FIRE PUMPS



INDIAN FIRE PUMPS are approved by Underwriters' Laboratories. When you choose an INDIAN you select the BEST!

"Choice For Quality The World Over"

More and more new apparatus is coming through with INDIAN FIRE PUMPS mounted as standard equipment. There are good reasons why so many fire protection agencies insist upon having these *"one man fire depts."* on their trucks.

Enjoy the time and effort saving advantages which come from having INDIAN FIRE PUMPS available for all class "A" and many class "B" fires and small oil fires.

Fire Chiefs tell us that "INDIAN FIRE PUMPS *alone* will handle 40% of their calls and are worth their weight in gold."

Put INDIANS on your present trucks — specify them to be installed on new trucks.

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WOULD YOU BUY A RIG LIKE THIS?

No up-to-date department would use an obsolete wagon like this, yet many are still using old-time fire helmets. There's as much difference between *new* Bullard Fiberglas helmets and others as there is between the above rig and the trucks you use today. Fiberglas helmets surpass all standard drop and dielectric tests, yet are lighter—more comfortable to wear. Test them yourself. Discover why more and more modern departments are switching to Bullard Fiberglas fire helmets. Your choice of permanent molded-in colors.

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275 Eighth Street, San Francisco, California

Bullard Universal Gas Mask with SMOKE EATER cannister

Approved respiratory protection in atmospheres containing 16% or more oxygen. Special filter gives protection against toxic fumes, dusts, mists, fogs and smokes.

The WATCH DESK

Overhauling the firemanic news of the day

by ROI B. WOOLLEY

NO Smoking "Might Be a Hardship"

The question where, and when should smoking be permitted in public schools again "rears its ugly head."

A member of the Board of Education, of Chatham, N. J., William Ball, said that a proposed regulation recommended by the municipal fire department to prohibit virtually all smoking in Chatham school buildings, would "work a hardship" on persons attending adult classes at the local high school.

The Board tabled—at least for the present—the regulation which would bar all student smoking and limit smoking by adults to the teacher and boiler rooms and offices. Smoking in the library would be permitted only during meetings of the school board or similar groups. Smoking at public gatherings at schools would be restricted to halls "if sand pails were present."

The regulation, if adopted, would be enforced by the municipal fire department.

* * *

Costly Settlement for Burns Case

An out-of-court settlement of $112,500 damages for burns suffered by two children at a backyard barbecue was reached at Riverhead, L. I., on Nov. 4th, last.

On June 8, 1952, two children, Judy and Henry Trefeny, of Bohemia, were burned when, it was said, J. Duffield Prince of Oakdale, L. I., host at the party, poured alcohol on a balky charcoal fire and the resultant flareup caught the youngsters.

A $200,000 damage suit was brought by the children's father, Henry Trefeny, against the estate of M. Prince, who died early this year. Mr. Trefeny's lawyer contended the children would be disfigured for life by their burns.

* * *

On the Nose—or a Scent for News

The following news items, contributed over a period of time, all come within the old slogan: "Your nose knows" and serve to illustrate some of the problems in the life of today's fire fighter:

TOLEDO, OHIO—Three brothers and their sister spent Christmas in hospitals because they wanted to show Santa Claus how well they took care of their previous year's presents.

Children of Mrs. Mabel Winter, planning to show old Santa that they had been good during the year, went to the basement to get cleaning fluid to polish the tricycles brought them the year before.

Mrs. Winter said the children eagerly went to work cleaning the vehicles; then their joyous laughter ended. She sensed trouble, rushed to the basement and found them all unconscious, the victims of chemical fumes.

By the dint of inhalators, oxygen, ambulances, firemen and hospital attendants they all recovered, but they missed Christmas. Let's hope they did better in 1954

BUSHNELL BASIN, N. Y.—Two men were revived by inhalator crews last October after they were pulled unconscious from a 14-foot-deep tank of fermenting cabbage in a sauerkraut plant.

One of the victims was the manager of the plant who said an employee—the other victim—was overcome by carbon dioxide as he attempted to scrape the four-foot-deep layer of cabbage in the tank.

The manager said he in turn was overcome when he went to the aid of the first man to succumb. Both men were taken from the tank by other workers. All recovered.

NEW YORK, N. Y.—A five-gallon jar of muriatic acid caused a big to-do for twenty minutes or more, at 50th Street and Avenue of the Americas on Nov. 14, last.

The jar of acid was one of six aboard a truck which made an abrupt stop close to the Radio City Music Hall to avoid hitting a taxicab.

The container sloshed the deadly acid over the street and police and firemen were called to wash away the steaming acid, and to divert traffic. One hit, one run, one error.

PHILADELPHIA, PA.—Five employes of a Kensington yarn mill were hospitalized for treatment from the effects of chlorine gas which they inhaled after a valve on a cylinder blew out and the gas was released in the mill.

The accident occured when a workman and an assistant were preparing to attach a portable cylinder containing chlorine to a feed line. A valve blew, and chlorine seeped through the mask of one of the men. The other, who had no face protection, retreated. An alarm was sounded and all employes of the plant were evacuated.

Fire Department Rescue Squads 1 and 2 donned gas masks, put an emergency cap on the cylinder and removed it from the building. All the affected recovered.

WILLIAMSTOWN, N. J.—Seventy-five volunteer firemen won't soon forget their experience in fighting a fire in the basement of the First National Bank of Williamstown. The fire itself didn't amount to so much—it resulted when a bank employee was burning checks in the basement—it was the resulting effects that did the dirty work.

The volunteers were halted in their effort to extinguish the fire when a collection of tear gas bombs, kept for bandit protection, exploded in the small cellar.

The explosion sent seven employees of the bank flying for the outer air—and held the firemen at bay for half an hour, until masks were obtained from police of a neighboring town.

NEWARK, N. J.—There was something fishy about Newark, t'other day, according to press reports. Residents speculated that a long-deceased whale was rotting in the meadows, or the ripe fragrance was poisonous smog from the industrial ironbound section.

While speculations were running full blast, fire and police HQ's were running full blast answering quiries and complaints of those who had a snootfull. Downtown, several folks were seen on the streets with masks on. Employees of some offices—mostly gals—went home for fear they would be gassed.

Late in the afternoon, scent-slueths traced the odor to a gray-white smoke which blew into the city from a smoke-stack of an oil firm beyond the city line—Harrison-way.

ROCHESTER, N. Y.—Fumes generated by a chemical reaction in a bathtub, where a gent was laundering baby clothing, overcame the launderer, and brought firemen on the double.

City chemist identified the fumes as chlorine. He said they were a "freak creation" of hot water, warm air and a liquid cleanser.

The unconscious male "washlady" was revived by city firemen.

* * *

In Her Cups?

We print it just as we got it. Write your own caption.

Seventeen pieces of fire apparatus from four cities roared to a hospital in Derby, Conn. in response to an alarm. All they found was a woman visitor who wanted a drink of water. She told firemen she thought the fire alarm hook next to the drinking fountain would release a paper cup.

* * *

Wanna Buy a Fire Boat?

Another one of New York City's fireboat fleet has come to the end of its hawser and is being sold. It is the George B. McClellan, which cost $84,000 in 1904, and is no longer wanted by the Fire Department.

The 265-ton McClellan, which measures 117 ft. over all, is not in operating condition, but is seaworthy. With its fire fighting equipment still intact, the craft is tied up at Pier 53, Hudson River, waiting the outcome of bids opened Dec. 15.

A boiler explosion a year ago headed the ship for the discard. The blast resulted in the death Fireman John D. McKean, whose name was later given to the Fire Department's newest $1½-million boat, which has been undergoing acceptance tests.

With the McClellan, the Marine fleet of the Department originally consisted of ten fireboats and the fireboat tender "Smoke."

* * *

Hot Off the Tape

In Boston, Mass. District Fire Chief Harry W. Murphy followed units of the Boston Fire Department in answer to an alarm the night of Dec. 5th. The $1,000 fire was in the Chief's home. . . . Secretaries on Capitol Hill were a bit more cautious on Dec. 10th about where they put their coats. They found that sunlight, pouring through windows and passing through a glass ice-water dispenser, was burning holes in their garments on a coat-rack. . . . In Walla Walla, Wash., a $60,000 suit was filed against the driver of a vehicle involved in an auto crash there last June which killed a Walla Walla fireman. His widow filed a suit in superior court asking that sum as the income her husband would have earned at the rate of $3600 a year. . . . Delayed reports have been

SAVE LIVES...
SAVE MONEY...
Bi-Lateral
FLEXIBLE
...FOLDS FLAT FASTER!
...STAYS SAFE LONGER!
WHEN YOU BUY WITH YOUR CONSCIENCE YOU'LL
Bi-Lateral
When you are dealing with lives as well as dollars your conscience should be your guide. To be safe at all, safety must be absolute! Cheap hose is expensive in the long run—in lives as well as money! Bi-Lateral has been famous for quality since 1907—and we don't intend to endanger that reputation—or lives—by making "cheaper" hose to meet a cheaper price. Cheap hose must be replaced in seven years—Bi-Lateral will give you twenty years of safe service. Bi-Lateral construction leaves the rubber free and unattached from the jacket at both points of fold. This permits the rubber lining to protect itself from creasing or compression and eliminates cracking, leaking, "pin-holes," or "seepers."
We believe that safety and long run economy are more important than price alone in the purchase of fire hose. That's why we say, "when you buy with your conscience, you'll Bi-Lateral!"
FIRST AGAIN!
BI-LATERAL was first to construct hose with the bi-lateral non-creasing feature for longer life, lower cost in the long run and true safety. Folds flatter, handles more easily!
BI-LATERAL was first to change the pin-lugs to rocker lugs for safer, easier-handling couplings, lower-cost hose coupling maintenance.
BI-LATERAL was first to offer a real detergent, BI-KLEEN—made especially for fire-hose cleaning exclusively for Bi-Lateral by the Essentials Chemical Co. Oil and dirt rot hose—Bi-Kleen is safe, non-toxic, keeps hose "inspection-white," keeps it cleaner, safer . . . good for fire-house and apparatus, too!
AND BI-LATERAL was first to furnish free fire hose record cards to fire departments. They are still available—send for a supply!
Bi-Lateral FIRE HOSE CO.
410 N. WACKER DRIVE, CHICAGO 6, ILLINOIS

Electric Light and Power for Every Need

ONAN ELECTRIC PLANTS

New Emergency Power Unit

carries 10,000 watts of *fire-fighting light and power*

Built to specifications of the Greensboro, N. C. fire department, this power unit incorporates many new ideas. Both sides of the truck, for instance, hold identical equipment. Located in the many steel compartments are four 500-watt floodlights, five 150-watt hand lights, electric saws, suction fans, electric drills, two 300-foot reels of light cord, an acetylene cutting and welding outfit and dozens of other items. Four more 500-watt floodlights are mounted on top of the truck on standards which can be raised to 4½ feet above the truck roof.

Power for all electrical equipment is supplied by an Onan heavy-duty, 10,000-watt water-cooled electric plant. Its dimensions allow it to be placed across the truck body behind the cab. The plant is started electrically.

Whether your requirement is for a truck-mounted power unit such as this one, or for smaller hand-portable units, Onan has the dependable 4-cycle-engine-powered plants that meet your specifications.

MODEL 10HQ, 10,000 Watts

This is the Onan model used in the Greensboro unit. Powered by a 4-cylinder, heavy-duty gasoline engine. Equipped with all necessary instruments and controls.

WRITE TODAY

Special folder shows scores of Onan models for fire department uses.

D. W. ONAN & SONS INC.

2893 University Ave. S. E., Minneapolis 14, Minnesota

received of similar accidents within a couple of months of each other. The first: William P. Miller, 31, a volunteer fireman was critically injured when he fell from a pumper on the way to answer a fire alarm. A member of the Glenwood Landing, L. I., Fire Department, he worked as a lineman for the N. Y. Telephone Co. He suffered basal skull fracture and contusions and lacerations of the head. The second item is from New York City where Fireman William Nodine, 39, attached to Engine 55, suffered back and eye injuries when he fell from a fire truck at Mott and Hester Streets while responding to an alarm. . . . In Tuscaloosa, Ala., 200 University of Alabama male students threw bottles at a police car and built a bonfire in the main street in an unruly disturbance Dec. 5th. Two students were jailed by campus cops before the disturbance was broken up. The students were said to be trying to start a "panty raid" on co-ed sorority houses. After scrapping with cops, whose radio car was wrecked in the men's frat' house area, they piled leaves in the middle of the University avenue and set fire. Firemen put out the blaze.

Among the Buffs

By Paul C. Ditzel

WHILE this might appear to be a little out of season, I thought you would be interested in Christmas greetings sent out by various buffs and their clubs. I realize this column probably is reaching you when you've long since forgotten about Santa Claus and are now worried over the bills that he forgot to take with him.

Anyway, it's Christmas Eve here along the Pacific Ocean so here goes with some descriptions of cards received which might give you ideas for the next Yuletide. After all, there's only 365 more days until . . .

Editor Geoffrey F. D. Pratt of FIRE ENGINEERING's English contemporary, "Fire Protection," sent a card containing a photograph of a Nottingham, England, rig from the 1890's. The picture was taken from the recent Coronation Issue of his excellent publication and shows the Chief Constable of that time, together with his crew and their mascot. If you look closely through all the whiskers you'll see which one is the dog.

A cartoon by Al Papas featured the card sent by Buff Gene and Marge Chapman. The three-color drawing shows Gene, still in bed, being carried to a fire by fellow buffs at 3 a.m. Mrs. Chapman has a fire helmet perched on her head and is pouring coffee for hubby.

Another oldie came from the Box 113 Club of Pontiac, Michigan. Their Season's Greetings showed a horse drawn aerial belonging to Pontiac about 1917.

Engraved cards went out from Kansas City's answer to the fire buffs, Tom Jewett, whose cards showed him turning out to an alarm with his wife, Martha, and Dalmatian, Buff. Tom, naturally, is wearing one of his British brigade helmets he brought back from his recent tour of the Continent. This demon from The Kansas City "Star" says he's "rushing to bring you Four Alarm greetings."

Baltimore Hotshot A. N. (Smokestack) Hardy elaborated upon an exquisite Christmas card by mounting a photograph of an Amoskeag self-propelling steam fire engine inside. Then, not to let us forget that every week is Fire Prevention Week, he enclosed a leaflet shouting, "That EXTRA LOOK Before Retiring May Save Life and Property." The leaflet bore the signature of the Box S.H.C. Association, Inc., Baltimore, Md., and was printed through the courtesy of Clarke Press.

Chicago's Robert Freeman sent along a Christmas greeting and Editorial Director Fred Shepperd of FIRE ENGINEERING used a picturesque winter scene for his Yuletide message.

Turning to the Department of Onions for a moment, Ed R. Damaschke, secretary of the International Fire Buff Associates, Inc., says his group was a little disturbed over incorrect information supplied to this column by another buff organization. We're sorry, too, Brother Damaschke, that our tipster implied that individual fans may become members of this national organization.

"The associates will gladly accept buff clubs into our organization, but not individual members," he stressed. "I have received several letters (following the recent mention in this column) and am informing the senders to endeavor to form a buff club." Interested clubs should contact him at 915 West Marshall Ave., Ferndale 20, Mich.

Many fire buff club newspapers find their way out to this sand dune, but few of them show such excellence and general interest as "General Alarm," put out by the Box 414 Association, 530 N. Calvert, Baltimore 2, Md.—or at least that's the most recent address I have for that organization. Editor Ray Wheatley's Christmas Issue and past ones will be taken up in greater detail in a near future column. Lack of space this month prohibits a description of Editor Wheatley's top-notch work.

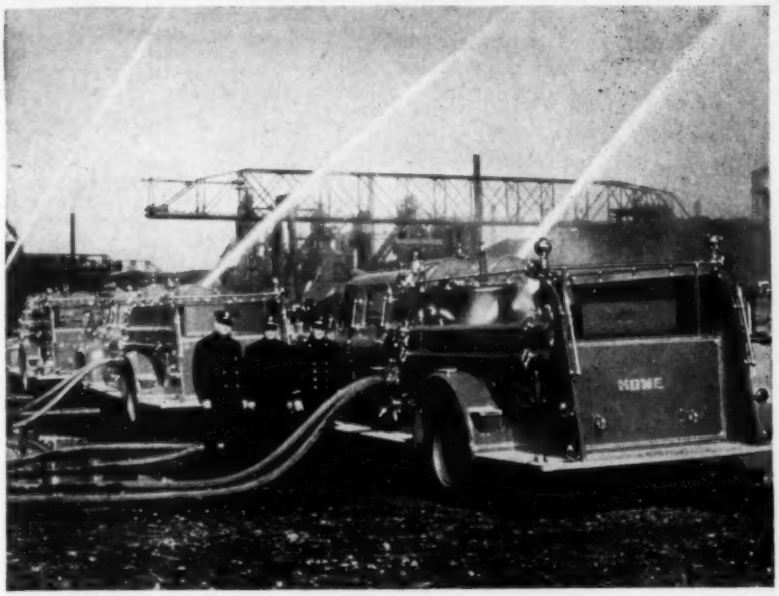
Secretary Ralph C. Croteau of The Box 4 Associates Inc., an organization of the Worcester Fire Department, Worcester, Mass., says Lieut. Gov. Sumner B. Whittier of the Commonwealth was on tap as an honored guest for that club's 34th annual banquet, January 19.

Among other honored guests, said Ralph, were Robert M. Tappin, state fire marshal; Herbert F. Travers, chief of the Worcester Fire Department; Mayor James D. O'Brien; Francis J. McGrath, city manager; Lorten (cq) C. Walden, superintendent of the Worcester Fire Patrol and William P. Finneran, Worcester Police Chief.

Guest Speaker was Austin H. Wilkins, deputy forest commissioner of Maine who was to speak on "How Forest Fires are Fought in the Northern Wildland Townships of Maine." Slides of past fires were shown, including the great Bar Harbor conflagration. Box 4 has a membership of 100 professional and business men of Worcester and was formed in 1921.

Publicity Chairman Raymond T. Seward of the 255 Club, 1345 Rogers Ave., Brooklyn 10, N. Y., says the club's new officers include: Harold Graham, president; John Skelly, vice president; John Gallagher, secretary and executive board members David Bayard, Richard Nelson and Albert Purino.

That's it for this Christmastide, here at 419 Napoleon St., Playa del Rey, Calif.



WATEROUS-equipped trucks, built for City of Dearborn by Howe Fire Apparatus Co., pass test

Dearborn compares; picks Waterous

● Mayor Orville L. Hubbard's modernization program for the City of Dearborn, Michigan, called for purchase of four new 750 GPM pumpers.

Chief Frank J. Gilligan, a professional fire fighter for 30 years, prepared specifications, then directed an exhaustive study of all available equipment.

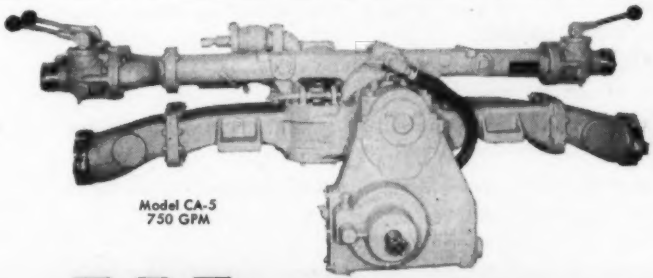
Result: purchase of the four WATEROUS-equipped pumpers shown above.

Dearborn is typical of progressive communities all across the nation, which are writing more exacting specifications than ever before.

For example, more specifications now call for a horizontally-split pump body that permits impeller assembly removal without disconnecting drive lines, removing transmission, or disturbing the setting of the pump in the chassis. They call for bronze wear rings which make it possible to renew efficiency without the need for replacing entire pump casing.

There's also a growing insistence that impeller shafts be supported by oil-lubricated anti-friction bearings located outside the pump casing and protected from water and dirt by packing, flinger rings, and oil seals.

If you are planning to buy new pumping equipment, you'll find "Preferred Fire Pump Specifications" a helpful guide. For your free copy, or for complete information on complete line of WATEROUS *Dependable* Fire Pumps, write WATEROUS COMPANY, 40 Fillmore Ave., St. Paul 1, Minn.



Model CA-5
750 GPM

Waterous
DEPENDABLE PUMPS
SINCE 1886

Questions and Answers

Locating Fire Stations

To the Editor:

I would greatly appreciate it if you would refer me to any books or articles that offer primarily mathematical approaches to the selection of the location of fire stations, as being distinct from the usual intuitive, subjective, or rule-of-thumb approach.

N. D. P.

Answer: There is no such thing as a mathematical approach to the selection and location of fire stations. Because of the widely varying natures of cities, as well as wide variation in types of construction, industries, etc., arbitrary rules have been set up which give fairly satisfactory results.

For example, the "Standard Schedule for Grading Cities and Towns of the United States with Reference to Their Fire Defenses and Physical Conditions," published by the National Board of Fire Underwriters, gives the following on 'distribution of companies':

"Distribution of Companies — Companies shall be provided and so distributed as to assure quick response of the first due company; also that, for serious fires in high value districts, the necessary number of companies are promptly available, and, in the larger cities, that simultaneous fires can be handled. The location of values, the topographical conditions, traffic congestion, and the number and extent of runs shall be taken into consideration. To accomplish quick response of the first due company, no point in any high value district shall be more than ¾ mile travel distance from a pumper or hose company or a pumper-ladder company, nor more than one mile from one providing adequate ladder service; in residential areas the requirements are respectively 1½ miles and 2 miles for closely built sections, and up to 3 miles for each class of service in areas where buildings are scattered."

Effect of Wetting Agent on Fish

To the Editor:

Recently we were called to a barn fire, and during the course of mopping up, we used 500 gallons of water mixed with 5 gallons of wetting agent on a pile of hay. The barn was located about 500 feet from a small pond and the water that we used drained into this pond.

About a week after the fire, the owner of this pond called me and told me the fish in the pond were all dead and that the water that flowed over the dam was foaming.

Do you think that the wet water we used was the cause of the fish dying?

T. A. D.

Answer: It is very likely that the wetting agent was the cause of the destruction of the fish in the pond to which you refer. It is also very likely that the foam created where the water flowed over the dam was also the result of the wetting agent drained into the pond. Of course, there is a possibility of depletion of oxygen in the water by the flushing of by-products of burned hay into the pond.

Some wetting agents in concentration are toxic to animal life. Most of them create foam when agitated in water.

Unless an analysis were made of the water in the pond immediately after the discharge of the wet water thereinto, there could be no proof that the wetting agent alone was responsible for the death of the fish.

Pressure to Close Clapper Valve, Etc.

To the Editor:

I would appreciate your answering the following questions:

1. How many times greater is the cooling power of water than air?

2. With a 60 pound pressure on one side of a siamese, how much pressure on the other side of the siamese would be needed to close the clapper valve on the side the 60 pounds pressure is on?

G. W.

Answer 1: Per pound, air has but 23.66 per cent of "cooling power" of water. This is based upon water having a specific heat of 1 and air having a specific heat of .2366.

BAR-WAY COUPLINGS...

For booster and high pressure fog lines

There are four good reasons why the fire fighters specify BAR-WAY couplings. Four reasons why BAR-WAY couplings are growing in favour with firemen, hydraulic engineers and others who insist on the best.

- **SAFETY**—The coupling becomes the *strongest part of the hose line.* Tested to 3000 pounds pressure and 500 pounds pull.
- **FULL FLOW**—No suppression of flow in coupling. No shrinkage of hose at coupling.
- **FLEXIBILITY**—Reels smoother. Easily replaced. Nothing to catch on corners or underbrush.
- **BETTER MADE**—Accurately machined, always the same, interchangeable. WILL NOT FAIL.

Send for our free pamphlet. Gives detailed specifications for all types of pressure hose, ID and OD.

BAR-WAY MFG. CO., STAMFORD, CONN.

The weight of a cubic foot of air at 60 degrees Fahrenheit is .0764 pounds. Thus one pound of air is equal to 13 cubic feet.

Answer 2: With regard to the pressure differential which would close a clapper valve in a siamese, this should not be more than a pound or so. It depends entirely upon the friction of the hinge of the clapper.

If the clapper swings freely, the one pound difference between the pressures on the two sides of the siamese would be enough to close it.

Thus if the pressure on one side were exactly 60 pounds per square inch, and this pressure were not increased by the closing of the clapper valve, the pressure on the other would be about 61 pounds.

Of course, if the hinge of the clapper does not operate freely, the required pressure for closing it would be greater than one pound.

Carrying Capacity of Hose; Power to Raise Water

To the Editor:

1. In our fire manual the statement is made that the carrying capacity of a 2½-inch line is 3.9 times greater than that of a 1½-inch line. This is an accepted fact. Could you tell me why this is so, because when you find the area of these lines, it is $2^7/_8$ times, using the method for pipes and nozzle tips. Why doesn't this apply for hose?

2. Why is it when a pumper is drafting water at 15 feet and forcing it up a height of 80 feet, it is the same as if the pumper were pushing it a height of 95 feet. In other words, it does the same amount of work.

F. O.

Answer: The carrying capacities of two hose lines of different diameters are not proportional to their cross-sectional areas. Although such relationship is sometimes employed, the results are quite inaccurate.

One of the major factors affecting the transportation of water through hose lines is the inner surface, or inner circumference, of the hose line. The more such surface that water must pass over, the greater is the drop in pressure and, consequently, capacity is reduced by friction loss. To be specific, the cross-section area of a 2½-inch hose line is 2.78 × the cross-section area of a 1½-inch hose line. On the other hand, the inner circumference of 2½-inch hose is but 1.67 × the inner circumference of 1½-inch hose. Hence you have a proportionally higher area of contact in the 1½-inch hose than you have in the 2½-inch. Thus the carrying capacity of the smaller hose is much less than the 2½-inch hose from the standpoint of cross-sectional area.

Answering your second question, to raise a pound of water one foot by any means, requires one foot-pound of work. If you must raise a pound of water 15 feet, you do 15 foot-pounds of work.

Whether the water is forced up by pressure or "drawn" by suction, the result is the same. You must remember that before water can be lifted by suction, the pumper must exhaust the air in the line, or create a partial vacuum

GET THEM OUT... Safe and Fast!

A Compact Electric Powered HACKSAW

Only $84.50*

Operates on Standard 115 Volts AC Commercial Current or From Power Supplied By Portable Electric Generating Equipment

A Completely Self-Contained HEAVY-DUTY Sawing Tool

A rugged dependable heavy duty saw that fills perfectly every special or emergency sawing need. Zips easily through any sawable substance including wood, metal, transite, embedded nails, etc.

Powered by famous MILWAUKEE-Built 115V ac-dc motor . . . with lifetime lubricated ball and roller bearings throughout. It's compact, light in weight and can be easily maneuvered about with one hand. Needs no starting hole when sawing wood or comparable substance . . . plunge cuts right in. **Act now** to "SAWZALL" equip your fire, safety or rescue crews and be ready for every emergency need.

* Furnished complete with handy steel carrying case and full complement set of Sawzall blades.

Sawzall BLADES FOR EVERY SAWING NEED

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SENSIBLE LUG COUPLINGS

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in the intake to the pumper, which requires theoretically just as much work as pushing the water up by pressure the same height.

While we say atmospheric pressure pushes the water up in the suction, it will not so elevate water unless a vacuum is created on the pumper side of the suction hose. And to create this partial vacuum, the engine is doing just as much work as it would be doing if it were placing a corresponding pressure on the intake end of the suction hose.

Discharge from Baker Cellar Pipe

To the Editor:

The volunteer fire company, of which I am a member, has recently been equipped with a 1,000 gpm pumper which is equipped with a Baker type cellar pipe. The cellar pipe is of a new type having two one-inch tips which are set at angles to one another.

This cellar pipe is, at the present, the center of a small controversy regarding the correct calculation of its friction loss and flow. I have advanced a solution to this problem, and believe that for all practical purposes, we could assume a flow of from 350 to 450 gpm and a resultant friction loss of about 40 pounds per 100 feet of 2½-inch hose.

The storm rages over whether we should assume the flow is the sum of the flow of two one-inch nozzles (416 gpm in 2½-inch hose) or the equivalent of two one-inch nozzles (a 1⅜-inch nozzle) at the same nozzle pressure. W. A. P.

Answer: No experimental data on the friction loss in the new Baker pipe are available. The friction loss in a unit of this type varies with the rate of flow, being greater at higher flows than at lower flows.

In the absence of experimental data, we might assume a 10-pound friction loss for the average flow.

This 10 pounds should be deducted from the engine pressure before a problem involving the Baker pipe is solved.

In solving the problem, the two 1-inch tips may be approximated, giving us a 1⅜-inch nozzle as the size of the combined nozzle. Or we may find the size of a nozzle exactly equal to the two 1-inch nozzles, and develop a special value of K for such nozzle on a 2½-inch hose line.

In the first case, you could take a standard size nozzle nearest to the two 1-inch tips and we have a 1⅜-inch nozzle. K for a 1⅜-inch nozzle on 2½-inch hose is .341.

If we use a nozzle the exact size of the two 1-inch nozzles, then we square each of the 1-inch nozzles, add their squares, and extract the square root of the sum. The square root of 2 is 1.414 inches.

To find the value of K for a nozzle of this diameter, we multiply the 1.414 by itself three times and divide by 10.

This gives us a value of K of .4 for a nozzle 1.414 inches diameter.

With these values, we can solve any problem involving the Baker cellar pipe by established methods.

Obituaries

Chief Jos. Lynch Dead

Martin Joseph "Mike" Lynch, 60, Chief of the Dekalb County, Ga., Fire Department and a native of Leitrim County, Ireland, died Nov. 26, last, after a short illness. Chief Lynch joined the fire department of Chattanooga, Tenn., at the age of 21. In 1940 he came to Dekalb County and became a fireman at the Druid Mills Department, then privately owned. When this Department became part of the newly organized Dekalb County Department, Lynch became Assistant Chief and then Chief. At his death he commanded the second largest fire department in Georgia, with nine stations and fifteen pieces of equipment.

F. M. Honea has been appointed to succeed the late Chief Lynch. Chief Honea has been first Assistant Chief for the past seven years and is a lifelong resident of the County. He has been with the Department for twelve years, during which time it grew from one company to its present size.—SIDNEY B. JEWETT.

Nelson Bauer of Pyrene Dead

Nelson W. Bauer, 60, died Dec. 1, 1954, at the East Orange General Hospital, East Orange, N. J.

Mr. Bauer was assistant secretary and assistant general sales manager of the Pyrene Manufacturing Company, Newark, N. J., widely known makers of fire extinguishing equipment.

Surviving are his widow, a brother and two sisters.

W. R. Beattie Dead

William R. Beattie, 83, of Bladensburg, Md., died Nov. 21, 1954, after a long illness. He was widely known among Maryland fire fighters, having been a charter member of the Bladensburg Volunteer Fire Department, organized in 1924; founder of the Bladensburg Rescue Squad, which responded to 1632 calls in 1953; and organizer of the Prince Georges County, Md., Rescue Squad Association in 1928.—IRVING JOHNSON.

Joseph M. McSweeney Dies

Joseph M. McSweeney, 61, of Baltimore, Md., died suddenly of a heart attack on Nov. 2, 1954. He was chief fire investigator and Deputy State Fire Marshal of the State of Maryland.

J. Howard Story Dead

J. Howard Story, 62, died Nov. 21, 1954, after a short illness, in Neptune, N. J.

He was well known to the eastern fire service where he had represented fire apparatus manufacturers since 1926, in which year he became associated with the Seagrave Corporation. He remained with Seagrave for 16 years, first as salesman and later as manager of the New York office, which was terminated because of World War II.

During the war he served with the U. S. Army engineers as fire truck inspector and, later, with U. S. Rubber Company.

For the past six years Mr. Story was

Scratch
.....that's where we start from...
right from scratch to give your department a distinctive looking badge. BLACKINTON designers are well experienced in the badge field and will gladly work up sketches of a **custom design** for your department. Just think of the added prestige for your men! There is absolutely no obligation for this extra **BLACKINTON** service.
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associated with the John Bean High Pressure Fog Division, Food Machinery and Chemical Corporation, with headquarters in New Jersey, where he was a familiar figure among fire fighters.

Mr. Story's hobbies were oil painting and collecting and refinishing antique clocks. Surviving are his wife, three daughters, his mother and a sister and eight grandchildren.

C. W. Olear Dead

Carl W. Olear died suddenly, Dec. 3, 1954, at Lockport City, N. Y., Hospital. He was a member of Niagara County Fire Chiefs' Association and other fire organizations, and first president of the Terry's Corners Volunteer Fire Co., Inc. At the time of his death he was Assistant Chief of the T.C.V.F.D.

He is survived by his wife, three daughters, his parents, two brothers and one sister. Funeral services were held in Lockport.

Robert Greenock Dead at 47

Robert Greenock, III, who will be remembered as a correspondent of FIRE ENGINEERING, died Dec. 1, 1954 in San Francisco after a long illness.

Always a devout lover of the fire service, 'Bob' was born in San Francisco 47 years ago; he graduated from Northwestern University and worked as a reporter for the Chicago *American* before returning to the Bay area. In the early days of World War II he was with the San Francisco *Examiner*, and later employed by the War Relocation Authority.

He was international representative of the CIO American Newspaper Guild from 1948 until April, 1952, when he suffered paralytic stroke.

From his early newspaper days Bob was a contributor to this Journal and as such, became widely known throughout the fire service, particularly on the Pacific Coast, the activities of which he reported faithfully.

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WIG-WAG REDHEAD
FOR FIRE, POLICE AND EMERGENCY CARS AND TRUCKS, AIRPLANES . . .
CLEARS THE WAY . . . and fast!
TYPE WW6 (Illustrated). Flashing and Oscillating—6" diameter. Also Oscillating only, 6" diameter.
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TYPE 166. Same as above. Flashing but without Oscillator. 3800 foot range. 6" diameter.
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TYPE F'N'A (Fore'N'Aft). Like 166 except drum shaped with two reflectors and two colored lenses, one facing forward and one toward rear, flashing.
6 volt units will be shipped unless 12 volt specified. Specify other color if red is not wanted.
Type F-5 High Power Portalite
Finest Dry-Battery Light made. Clamps on 7½ volt dry battery pack.
Moderate worklight for 24 consecutive hours or a powerful mile-range searchlight for 8-10 hours (much longer if used intermittently).
Also available with rugged cast aluminum case for battery in Duro-Satin finish (Type BF-5).
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Closed top fresnel lens—
Brilliant 50 candle power unit protects your equipment in all directions—even when parked at an angle—
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Furnished complete with push-and-pull dash type switch and flasher. Furnished with bolt mounting or with metal screw mounting when requested.
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"Master-Light Makers for 34 Years"

Persons in the News

Fire Marshal M. J. Corrigan to Retire

The Chicago press recently announced the planned retirement of Michael J. Corrigan, 78, for the last 18 years fire commissioner of the City of Chicago. He is expected to leave the service early this year.

Back in 1893, the Chicago Fire Department had yet to receive the blessings of civil service, which explains why a mere "broth of a man"—a 17-year-old named Corrigan, was able to get on the department rolls.

This same Corrigan fought his way up the ladder of success to become the City's Chief Fire Marshall. When he reached civil service retirement age, that didn't mean divorcing himself from the service he loved and fought in—and for.

When Chief Fire Marshal Corrigan moved "upstairs" to occupy the political post of Fire Commissioner, nobody expected him to view the organization over which he held sway from a distance. He was too old a smoke eater to change his ways. And so it was that albeit the city's Chief Fire Marshals came and went, Commissioner Corrigan seemed always in the front and thick of it, with his men.

"In his leadership of his men and guardianship of their lives, in his encouragement of development, of the best fire fighting techniques and in his persistent battles to obtain the most modern equipment, Commissioner Corrigan has served Chicago magnificently." That's what the *Chicago Tribune* said about him. And it's what those who know him and know his record will subscribe to.

Canadian Underwriters' Appointments

The following appointments have been announced by E. F. Tabisz, General Manager of Underwriters' Laboratories of Canada, to the Canada Fire Council:

F. X. Ahern, Fire Commissioner, Province of Quebec, to succeed E. Lavinge, who has resigned to assume other duties.

W. F. Holden, Commissioner of Buildings, Toronto, Ontario, to succeed Mr. K. S. Gillies, who has retired.

Mr. Frank J. Ryan, M.B.E., Fire Commissioner, Newfoundland.

The Fire Council of Underwriters' Laboratories is composed of federal, provincial, municipal inspection authorities, representatives of the Armed Forces, and insurance officials who deal

primarily with fire protection and prevention problems. Every Canadian province is represented.

The Underwriters' Laboratories of Canada is a non-profit organization sponsored by the Dominion Board of Insurance Underwriters and chartered by the Canadian Government for the purpose of investigating devices, systems and materials as to their life, fire and casualty hazard. Its headquarters are now located at 7 Crouse Road, Scarborough, Ontario.

Six Syracuse Firemen Advanced

Promotions and pay raises were given Nov. 9 last to six members of the Syracuse, N. Y., Fire Department.

To District Chief Leo Pacheck went the post of Second Deputy Chief, to succeed Harry H. Coon, named First Deputy Chief last August.

Capt. Charles J. Weber was advanced to District Chief and Vernon W. Ackley, who has been serving as Assistant Director of the Department School, was named Director.

John M. Dacey, who has been acting as Fire Marshal since the resignation in November of John F. Sloan, gets the post permanently.

Fireman Paul P. Duda is advanced to Lieutenant. Of the six promotions, those of Chief Pacheck and Marshal Dacey are provisional in the absence of civil service tests, which will be conducted later.

World Wide Fire News

By Roi B. Woolley

New Plane Fuel Tank Cuts Fire Hazard

The Civil Aeronautics Administration, on Dec. 15 in Indianapolis, Ind., unveiled an airplane fuel tank which will not burst and catch fire in crashes up to certain speeds.

The tank is made of rubberized nylon cloth, a product of five years' research by C A A test laboratories in Indianapolis, in cooperation with the United States Rubber Co. and Goodyear Tire & Rubber Co.

It is designed to hold tight in a crash in which passengers might survive the impact itself. It would eliminate from such crashes the gasoline fires which claim so many lives according to the team of scientists who invented it.

The tanks are best suited for transport planes, and commercial and private aircraft, and certain non-combat military planes. Although developed primarily with planes in mind, the tanks presumably could be used in gasoline trucks and racing cars, where there is also a fire hazard.

A possible drawback is the weight. The new tank is up to three times heavier than the conventional bladder-type tank and therefore may not be acceptable for some planes which must conserve weight. It differs from the bullet-sealing tank in military planes.

* * * * *

Sabotage on British Sub

Sabotage continues to plague the British Admiralty. Most recent case was that of the effort to blow up Briton's 1,120-ton submarine Artemis, at sea.

A hand grenade wired to blast the

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Avail yourself of the many advantages of buying ALL your personal equipment, from head to foot, from one dependable source—from a firm that assumes responsibility for the quality of EVERY item, and that stands back of it with a reputation gained in serving firemen for more than a hundred years. . . . Here is a partial list of the equipment we can supply, promptly. Many other items are described in our Catalog, sent on request.

TURNOUT SUITS
RUBBER COATS
RUBBER BOOTS
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REGULATION
and
OTHER STYLES

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SECRETARY'S BLANK FORMS

Write for Catalog 341

CAIRNS & BRO., Inc. - Allwood, Clifton, N. J.

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NEW— IMPROVED DESIGN

AUTOMATIC FIRE ALARM EQUIPMENT

UNDERWRITERS LABORATORIES, INC.—FACT. MUTUAL LABORATORIES—APPROVED

SPECIALISTS in the design, manufacture and installation of Automatic Fire Alarm Systems for over thirty years, J. H. Scharff, Inc., is now offering to the trade an all new advanced design line of Detectors, Breakglass Stations, Bells and Control Panels for automatic and manual fire alarms.

NEW
Fyrindex Combination Fire Detectors, completely self-restoring.

NEW
Pulalarm Hammerless type Breakglass Stations.

NEW
Flexibell Fire Alarm Bells.

NEW
Multi-Pact Multi-Purpose, Compact Control Panels.

REMEMBER **all new, designed for fast, efficient, trouble-free operation and low in cost.** Remember, too, that we are the only fire alarm manufacturer in the business that actually makes every system component we sell. This insures prompt, identical parts delivery.

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J. H. SCHARFF, INC.
36 MAIN STREET, ORANGE, N. J.

Write for Bulletin 6600-F

MORE **EFFECTIVE** FIRE PROTECTION

CITY • RURAL • FOREST

MODEL 6600 PUMPER—Instantly Self-Priming—No waiting when seconds count
HIGH PRESSURE—Use one or two hard-hitting streams or fire-blanketing fog-spray
LIGHT WEIGHT—Easily carried to source of water or fire area
NEOPRENE IMPELLERS—Pump dirty water as well as clean water—assure long life
POWER—Efficient 4-cycle, air-cooled 5 HP engine known and serviced world-wide
BY-PASS VALVE, SPRING LOADED GREASE CUP, NO LOSS OF PRIME, PLUS MANY OTHER FEATURES

WEIGHS ONLY 110 LBS.

UP TO 40 GPM AT 150 PSI

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engine room was discovered just in time to prevent a tragedy, according to reliable sources. The charge, four ounces of H.E. was big enough to shatter the main diesel engine and kill or wound the six men on duty. It would have disabled the ship, perhaps resulted in a major disaster and loss of the 60-man crew.

The Artemis hurried back to the 19,000-ton mother ship Montclair after the sabotage attempt was discovered. Admiralty detectives were assigned to the case. It was disclosed that the charge was planted by someone with considerable technical knowledge and it was timed to go off while the engines were running.

Other suspected sabotage including fires, have been investigated by the government.

* * * * *

From the World Fire News Ticker

Ten persons, including two children, were killed and two seriously injured Nov. 27 when explosives used to manufacture fireworks blew up in a house at Imus, fifteen miles south of Manila, P. I. . . . A fire late on the night of Nov. 26, in a children's home in Kangasala, southwest Finland, caused death to nine children, aged eighteen months to six years. . . . A few minutes after taking off from Dover Air Force Base at Dover, Del., on Nov. 27, a F86-F jet fighter plane crashed on a farm less than three miles from the base. The pilot walked away from the wreckage suffering only slight burns. Plane was consumed. . . . The 4,510-ton Danish cargo ship Olga Torm suffered heavy fire damage Nov. 27 at Santos, Brazil. The captain and 31 crewmen escaped without injury. . . . Just as though it was something new, the Soviet news agency Tass reported on Nov. 28 that the Soviet Union has squads of parachuting firemen to fight forest fires in Siberia. When fires are spotted by aircraft patrolling above the vast forest regions of Siberia, the firemen jump with their special equipment. Another "original" for the Reds. . . . Eleven passengers in a bus were burned to death and six others were seriously injured when the vehicle overturned and caught fire after colliding with a truck on the Carangola-Divinio road, in Minas Jeraos State, Brazil. . . . In Halifax, Canada, fire engines roared along the streets and fire fighters showed their efficiency in dousing a blaze in an old Defense Department Building. Shortly after they left, demolition workers arrived for the day shift on their job—tearing down the old structure. . . . Forest fires last year cost Canada $8,193,646 in damages and the expense of fighting them, the resources department announced in October. . . . On Oct. 11, last, gunpowder, stored in a house in New Delhi, India, exploded, killing three persons. . . . Nine Japanese died Oct. 14 in a fire that destroyed a farmhouse in Mito, Japan. . . . The flame of young love was dampened if not extinguished by a fire engine in the Soviet sector of Berlin recently. The 'gine crashed into a car carrying a bride to a church ceremony. She was treated at a hospital for minor injuries. The wedding took place a day or so later. Ah love! . . . An explosive tossed into a neighborhood Community party meeting in Paris on Oct. 11, last, injured four persons in a crowd of 40. . . . A new law in London, England, reads: "Unauthorized persons who listen in on police calls

and give tips on fires and burglaries to newspapers will be fined 10 pounds." More telephone headaches, eh? . . . Fire on Nov. 28 destroyed most of the commercial center of the north Victorian town of Kerang, 160 miles north of Melbourne, Australia, causing damage estimated at more than $500,000. Two thousand firemen reportedly battled the flames for hours before bringing them under control. A woman watching the fire collapsed and died. . . . One man was killed and three others were badly burned in an oil-well fire on Oct. 27th that destroyed a $250,000 drilling rig at Ma-Me-O Beach, Alberta, Canada. . . . A roof fire broke out at Westminster Abbey, London, Eng., on Oct. 27th but fire fighters had it out in seven minutes. Damage was slight. . . . Two employes of Warner Brothers studios at Fort Carson were killed on Oct. 26 when a truckload of phosphorus, used in the filming of a Korean war picture exploded, a third man was critically injured. . . . Some 1,000 persons were left homeless in Chunchon, 50 miles northeast of Seoul, Korea, on Oct. 26 when fire destroyed about 200 homes. . . . Fire of unknown origin swept through a section of downtown Jakarta, Indonesia, on Oct. 16, and left 2,000 persons homeless. . . . When the Liberian freighter "Travel Star' caught fire after grounding on a reef near Okinawa, a Navy seaplane took off fifteen of the crew members and an Army tug removed the ship's master and thirteen remaining crewmen. Fire virtually destroyed ship. . . . A late report confirms the news of last August that 14 workers of a fireworks plant in Andheri, fifteen miles from Bombay, India, died in a fire following a carelessly tossed cigarette. Fourteen others were injured. . . . Fire swept the officers' club at Fort Sheridan, Ill., headquarters area early Oct. 30, causing damage said to be $150,000. . . . Hot love sometimes gets a hot reception, as witness the Austrian youth whose girl friend unwittingly gave him more than a warm welcome. Seems he climbed a chimney of her house in Hetzendorf, near Graz—and landed in the hospital. She lit the fire at the wrong time. . . . The Village of Neuhausen, Germany, got a new fire engine last October. But it had no fire chief to run it. He's in jail, after confessing he set three recent fires to demonstrate the need for the new engine. . . . The fire force of the nation really went to town—all towns, all cities, wherever there was a fire department—in the national drive on muscular dystrophy. Financial facts aren't in as yet, but you can bet on it, the quota was knocked into a cocked hat.

"Cannon Wagon"

(*Continued from page* 30)

recalls when it was used to knock down a hazardous wall resulting from a fire at Franklin and Vine Streets.

So great was the back pressure of this "monster" that it required four standards for support when in service. Even then it was seldom used because the tremendous back pressure caused it to move about the street.

The last time it was used was at Bacharach's fire at 13th and Market Streets, many years ago. It was replaced by the Water Tower and is now at its final resting place before being scrapped.

Acknowledgement: From "Philadelphia Fire Department News."

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SUPER FYR-FLEX 600 & 400

it's made with DACRON!
The new, stronger, synthetic fibre load-carrying "filling" cord.
it's 25% LIGHTER!
Easier to carry . . . easier to handle. Gets into action faster!
it's more FLEXIBLE!
Easier to coil and uncoil . . . cuts loading time. Permits storing more hose in truck bed.
it's 50% STRONGER!
600 & 400 lb. test . . . withstands 50% more pressure than any hose of the same diameter.

For *faster* fire fighting action, get Fyr-Fyter's new Super Fyr-Flex . . . the fire hose that now outmodes conventional hose! Its exceptional strength without bulk, made possible with Dacron reinforcing "filling" cord, plus its lightness and flexibility, gives you top performance efficiency. And for longer life and economy, Super Fyr-Flex provides a new high in resistance to heat, chemicals, water absorption, mildew, abrasion, and wear. Plan now to take advantage of the performance extras you get in Super Fyr-Flex fire hose . . . write for complete information today!

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World's finest self-contained underwater breathing equipment

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Rescue, Salvage, Repairs, Inspection

★ The amazing new Scott HYDRO-PAK completely revolutionizes all forms of underwater operation. Almost anyone can with proper instruction, work comfortably underwater in complete safety. The Scott HYDRO-PAK often saves its purchase price the first time it's used. It enables any fire department to perform dramatic water rescues, recover police evidence or valuable property submerged underwater in addition to many other valuable public services.

Its full-face mask permits easy, natural breathing through nose or mouth. The famous Scott Demand Regulator automatically supplies all the air needed in any position, and adjusts for pressure changes for perfect comfort at all working depths. The Air "Econo-Miser" conserves the air supply for economical operation.

The HYDRO-PAK is made to the most exacting standards by one of the world's largest producers of fine breathing equipment for military and civil aviation, industry and the fire fighting service. Only Scott offers nation-wide sales and service facilities including air cylinder recharging.

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Export: Southern Oxygen Co., 15 W. 57th St., New York 19, N. Y.

News of the Manufacturers

(*Continued from page* 45)

Daniels Enlarges N. C. Mill

C. R. Daniels, Inc., manufacturers of diversified canvas products, including salvage covers, announces expansion of its Maryland and North Carolina mills and factories to handle increasing business.

The Weldon, N. C., Mill will hereafter handle all of the former Daniels mill spinning and weaving requirements. The latter property will be given over to increased production of tarpaulins, salvage covers, tents, etc., and other specialized ducks, with which the company has long been identified.

New Extinguisher Cart

To speed up fire control operations, particularly in those seconds following immediately the discovery of a fire, the American-LaFrance-Foamite Corporation of Elmira, N. Y., has designed a fire extinguisher cart—a device for stationing various combinations of dry chemical, carbon dioxide and vaporizing liquid type extinguishers at their strategic locations and for transporting them to the scene of the fire in the quickest possible time. There is no lifting from wall hangers. Simply grasp the cart handle and go.

American-La France fire extinguisher cart

This cart is especially useful when it is necessary for one man, such as a night watchman or a lone employee, to fight a fire. As he can carry three extinguishers instead of one, he does not have to leave a partially extinguished fire to run back for a reserve extinguisher. It is handy also for holding these extra extinguishers for standby protection during welding or other operations that create fire risks.

The height of the extinguisher hanger is adjustable so that the cart may be made to hold a variety of types and sizes of extinguishers.

Height, 46 inches; floor space required, 14x21½ inches; diameter of wheels, 10 inches; weight (shipped loose) 26.2 lbs.; finish, black enamel body and red enamel wheels.

Representative Flies to Cover Southwest

Robert W. Lassell, District Manager of The Gamewell Company's Dallas office, uses this Piper Tri-Pacer to expedite travel in the Southwest U.S.A.

R. W. Lassell with his plane.

Mr. Lassell's work with municipal officials in charge of fire alarm systems requires flexibility in planning travel. Use of the plane provides the required flexibility and dependability in keeping appointments.

New Powahatan Catalog

A new, comprehensive publication labeled "Catalog A" has been issued by Powahatan Brass & Iron Works, Ranson, West Virginia on its "Chief" line of interior and exterior fire protection items.

The loose-leaf book measures 9 x 11½ in. (cat. pages 8 x 11½) contains 70 pages, subdivided into four sections: Fire Department; Industrial; Government and Ground Key items, with an index.

For further information address the above.

New Model of Hydrant Jet Drain

A new model of the "One-Minute" Hydrant Jet Drain, recently taken over from the Jet Drain Engineering Co., Saginaw, Mich., by Ellis & Ford Mfg. Co., Inc., Ferndale 20, Mich., has been placed on the market by the latter company.

Hydrant Jet Drain

The device operates by means of a 6-volt motor and air compressor connected to the battery of a service car, truck, or tractor. It is claimed that it provides a fast and easy method for draining hydrants.

To drain a hydrant, insert in the water

1948 . . . Michigan Firemen had their hands full with this warehouse fire, which, they said, was the worst in several years. The sprawling three-story building was occupied by several industrial concerns. Damage was estimated at $500,000. (Int. News Photo)

NOW . . .
IT'S FIRE ATTACK!

FOR THE BEST *FIRE ATTACK*
GET IN FAST WITH A SCOTT AIR-PAK

YOURS IS A
FIRE ATTACK
DEPARTMENT
IF YOU HAVE
SCOTT AIR-PAKS
ON EVERY
FIRE TRUCK

An editorial in FIRE ENGINEERING (November 1953) stated "This failure to GET IN, to GET AT the fire in its early stages, has been a prime contributor to much of our mounting fire losses . . . and emphasizes the wisdom of adequately equipping the fire force with all the mask and breathing apparatus . . . required in *FIRE ATTACK.*"

Protect your men against smoke with SCOTT AIR-PAKS. Get in Fast for efficient *FIRE ATTACK.* Save more lives and reduce fire losses to a minimum. Write for complete information.

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Canada: Safety Supply Co., Toronto — Branches in principal cities
Export: Southern Oxygen Co., 15 West 57th Street, New York 19, N. Y.

port of the hydrant a hose which is connected to the Jet Drain fitting, and then plug in the compressor's air jet valve.

The compressor can also be used to inflate tires, spray paint, lubricate, etc.

The Jet Drain is furnished complete with 6-volt motor and direct-connected compressor in a heavy 16-gauge steel box with approximately 30 feet of air hose, blow gun, tire chuck and 9 feet of battery cable.

Italy Produces Sprinklers

The first Italian-made sprinkler systems for industrial fire protection are now manufactured in the Milan, Italy, plant of Officine Galileo A.p.A., leading industry in that country for production of mechanical and optical products, including scales, cameras, lenses, pumps, transformers, etc.

The automatic head of this sprinkler has Vetrosil bulb release which is approved by the Italian Fire Insurance Association.

Other items manufactured by O.G. are alarm, dry type, deluge valves, water bells, spray heads and fog nozzles for fixed piping systems of fire protection.

Rockwood Air-Operated Ball Valve

Rockwood Sprinkler Company, Worcester, Mass., has just introduced the Rockwood Air-Operated Ball Valve, for remote-control use. It can be instlaled in elevated or remote locations; valves which are installed in danger areas can be safely operated from a distance. Use of control panels for the convenient operation of many scattered valves is practical, through the use of this new valve.

Features of the new product are said to be: leak proof service; full round flow; quick opening and closing; no maintenance, and longer service. The valves come in sizes from ⅜ in. to 2 in. Complete units or kits to convert conventional Rockwood ball valves to air operation are available.

Full information may be had by writing Rockwood at Worcester.

Canadian-Built Quintuple for Weyburn

A unique quintuple-combination fire truck, the first of its type to be delivered in Western Canada, has taken its place in the fire department of Weyburn, Saskatchewan. The unit combines the features of a pumper, a booster, a hose truck, ground ladder unit and aerial ladder truck.

New quintuple-combination for Weyburn, Sask.

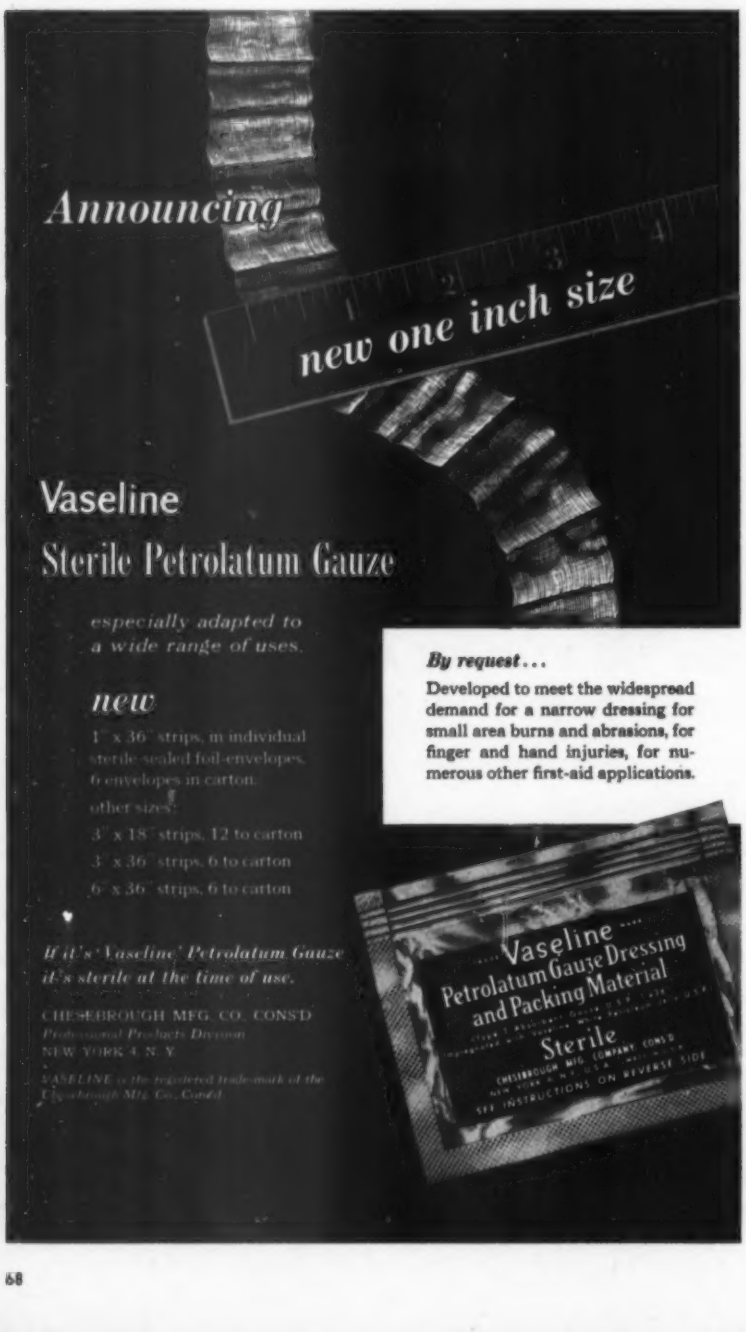
A standard International chassis of 23,000 pounds gross capacity was selected and frame lengthened to 273 inches and reinforced. At the speed of 2,400 r.p.m., the 450 cubic inch displacement engine develops 166 h.p.

The two-stage triple combination centrifugal pump delivers 625 imperial gallons of water per minute at 120 pounds pressure, supplying three 2½" hose lines, two 1½" hose lines and a 1" booster hose.

All discharge lines are equipped with individual pressure gauges. Six different pressures can be noted and controlled at one time while pumping with this arrangement. For high pressure fog gun work, using the booster hose, pressures in excess of 500 p.s.i. are possible with this combination.

In addition to its function as a pumper with booster tank, the truck carries a total of 1,600 feet of hose and a full complement of aluminum ground ladders. Other ladder equipment includes an electrically-operated, three-section aluminum aerial ladder which extends 55 feet above the turntable mounting by pushing a button.

Five compartments in the sides and rear provide room for accessories, including a nine and one-half foot folding life net, smoke masks, spare nozzle tips,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Vaseline
Sterile Petrolatum Gauze
especially adapted to a wide range of uses.
new
1" x 36" strips, in individual sterile-sealed foil-envelopes, 6 envelopes in carton
other sizes:
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3" x 36" strips, 6 to carton
6" x 36" strips, 6 to carton
If it's 'Vaseline' Petrolatum Gauze it's sterile at the time of use.
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VASELINE is the registered trade-mark of the Chesebrough Mfg. Co., Consd.
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Developed to meet the widespread demand for a narrow dressing for small area burns and abrasions, for finger and hand injuries, for numerous other first-aid applications.
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SEE INSTRUCTIONS ON REVERSE SIDE

foam equipment, etc., to mention a few. The unit complies with Canadian Standards Association specifications and it is Dominion Board of Insurance Underwriter's approved and listed. Built by American-Marsh Pumps (Canada) Ltd. of Stratford, Ontario, the unit was purchased through the Saskatoon Fire Engine Company.

A Commissioner's Views on Holding of Outside Jobs

The announced intention of New York's Fire Commissioner to permit members of the fire department to do outside work has caused considerable discussion, if not some trepidation, among the nation's fire fighters. As head of the largest fire department in the world, the decisions of Fire Commissioner Edward F. Cavanaugh, Jr., on this, and any other major policy affecting the operating conditions of personnel of that great organization, may be expected to have far-reaching effect.

In answer to a request by *Fire Engineering's* editors for his personal viewpoints on the subject, Commissioner Cavanaugh generously furnished a copy of a letter he had written to another enquirer which clearly establishes his thinking. We are privileged to quote the main passages of his letter, for the benefit of our readers, and at the same time to set at rest some of the rumors on the subject that have been circulated. The Commissioner writes:

"Putting it very briefly, I have definite opinions about outside work for firemen and have had for many years.

"First of all, I do not believe firemen or anyone else should, under today's standards, be required because of meagre salaries, to hold outside jobs I must add however, that there is a very practical necessity in the picture requiring not only firemen, but people in all walks of life, to augment their regular income because of today's living standards. I certainly hope that in the case of firemen, before many years have passed, we will have a rate of salary that will enable them to be firemen, and firemen alone. Of course at that time another problem may arise and that is the problem of working hours. By that I mean it is not the best thing in the world to have men away from their jobs, as in some cases as long as 72 hours under our regular system. At the moment, outside employment and outside occupations remove the danger of "idle hands" from that picture.

"Even if we overlook the matter of practical necessity, which I refer to, it seems to me there could only be four possible objections to firemen holding outside jobs:

"1. The possibility that it may deter officials from increasing salaries.

"The answer to that is quite clear because the attitude of the press, editorial writers, public officials, and the public in general who have suddenly become aware that firemen must work on the outside, is that they should not have to do it, and the City should give them more pay at the first opportunity. The outside job has dramatized the necessity for an increase in salaries at the earliest possible time.

"2. The possibility that the outside employment will decrease efficiency, or compromise the Department.

"That is indeed an important concern and responsibility of the Fire Commissioner, and I believe we have set up

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We have been supplying **FIREMEN'S CLOTHING** for over 25 years.

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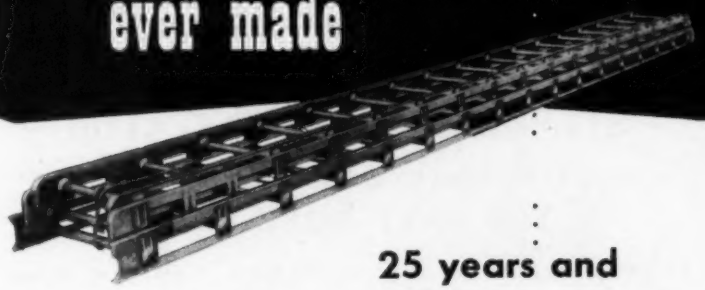

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adequate checks and balances, and reports, and supervisory controls to alert us to that possibility should it ever arise.

"3. The possibility that firemen may be injured in an outside job, and the City continuing liable for their compensation and security because they are firemen.

"My answer to that is that such cases would be rare, or at the most, few, and it is a risk the City must take in that it is not paying adequate salaries and should be prepared to assume the calculated risk of what may happen to a man who is working on the outside. Of course, there is always the situation that the man working on the outside becomes subject to compensation and other benefits in that outside job which would reduce the burden of the City in some instances.

"4. The very important objection that I have mentioned to you earlier that a man in one union, craft or guild, should not trespass on the interests of men in other unions, crafts or guilds.

"Frankly, that is not the problem of the Fire Commissioner, although he is interested in it and has an opinion on the subject. My opinion is, I would probably hesitate to do it myself. It is, however, a matter to be worked out among unions, not between the union and the Fire Department. And, one other good reason why it is not a matter between the union and the Fire Department is that hundreds and hundreds of firemen, if not thousands, who are engaged in augmenting their income on the outside do so without in any sense of the word trespassing on other unions. They are in little businesses for themselves; they are salesmen of certain types; they are specially trained men such as accountants, etc.; and they are in many fields of employment where there are no unions. If the Fire Commissioner was to decree that firemen could not work merely because of that union objection, or going further, if a union took the position that firemen could not work merely because of that union objection, or going further, if a union took the position that firemen should not work for the reasons that I have mentioned above, and which are known to all of us, they might very well be gravely hurting a large body of men who are in no way hurting uniformed or organized labor. The injury would be great because it would in many instances be depriving men of a small additional income enabling them to educate children, pay for illnesses, and otherwise maintain a somewhat decent standard of life. And I have to conclude that as sympathetic as I may be to the principle of a man in one union working in another, I do not think that there is a well founded objection on that point on which the Fire Commissioner might decree that firemen not to hold outside jobs."

Plastics Industry Sets Up Committee on Fire Prevention

A Committee on Fire Prevention has been set up by The Society of the Plastics Industry, Inc., 67 West 44th St., New York, N. Y. It will develop material for a manual on fire prevention as it applies to the broad field of plastics.

This new SPI committee will work closely with the National Board of Fire Underwriters in the preparation of this manual to satisfy the long-felt need for such information in the industry.

The material in this manual will serve to acquaint officials of municipalities and other regulatory bodies with what does and does not constitute a fire hazard in the plastics industry. This manual in the plastics industry.

In the past, so-called fire hazards have often been magnified unduly and it is felt that the assimilation and publication of instructive material on fire prevention in the plastics industry will help to clarify the thinking on this point.

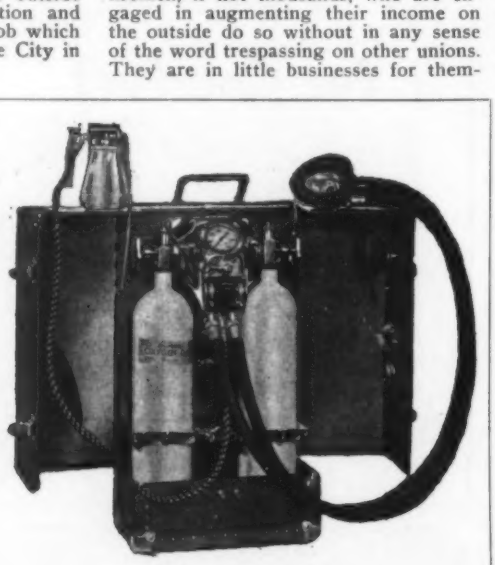
Convention Dates

Feb. 22-25—FIRE DEPARTMENT INSTRUCTORS' CONFERENCE. Annual meeting, Memphis, Tenn. Chairman, Richard E. Vernor, P. O. Box 1089, Chicago 90, Ill.

March 8-9—PHILADELPHIA SAFETY CONFERENCE. Annual meeting, Philadelphia, Pa. Session on March 8th to be sponsored by the Keystone State Fire Chiefs Association. For information, contact Leonard D. Roberts, President, Trevose, Pa.

April 25-28 — MINNESOTA STATE FIRE SCHOOL. Annual meeting, University of Minnesota Institute of Agriculture, Farm Campus, St. Paul, Minn. For further information contact Leonard C. Lund, Deputy Commissioner, Fire Marshal Department, Saint Paul 1, Minn.

Sept. 19-22—INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. Annual meeting, Omaha, Neb. For further information contact Chief Daniel B. Tjerney, Secretary-Treasurer, 8 Robbins Road, Arlington 74, Mass., or the Headquarters Office, Hotel Martinique, Broadway at 32nd Street, New York 1, N. Y.



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What's Burning

THE following list includes fires of $10,000 loss and over in the United States and Canada for the month of December, 1954.

Month Ending December 31, 1954

Alhambra, Ariz.—Vegetable packing shed No. 10 of Paul A. Ruth, destroyed. Boys playing with matches.

Phoenix, Ariz.—Calvin's Pied Pipe Shoe Store, spread to Tang's Rice Bowl banquet room and vacant store, all damaged. Boys playing with matches.

Phoenix, Ariz.—Warehouse and office of Western Division of Salt River Power District, destroyed.

Helena, Ark.—Lakeview Negro Elementary and High School, 15 miles south, destroyed.

Little Rock, Ark.—Arkansas Gazette building, damaged.

Walnut Ridge, Ark.—Building housing Lawrence County Implement Co. which has the International Harvester and Oldsmobile agencies, destroyed.

Berkeley, Cal.—Robb Manufacturing Co. damaged.

Covina, Cal.—New Church of Jesus Christ of Latter Day Saints damaged. Set by burglar.

Fullerton, Cal.—Anaheim Cold Storage Co., two other citrus storage plants and a garment factory, destroyed.

Glendale, Cal.—Main plant of Glendale Laundry & Dry Cleaning Co., destroyed.

Hollywood, Cal.—Tire retreading shop at 5901 Santa Monica Blvd.; a motion picture prop warehouse at 1119 N. Bronson avenue and automobile body shop at 5903 Santa Monica blvd., damaged.

Los Angeles, Cal.—Los Angeles Tanning Co. plant damaged. Sparks from buffing machine set leather hides on fire.

Los Angeles, Cal.—Golden State Latex & Rubber Co. building destroyed.

Los Angeles, Cal.—Lewis Food Co., manufacturers of dog food, destroyed.

Los Angeles, Cal.—Brentwood Estates home of film producer-director, William Wellman, damaged.

Los Angeles, Cal.—Galeria room of Biltmore Hotel damaged.

Oakland, Cal.—Furniture store, restaurant and 2nd apartment building, damaged.

Oxnard, Cal.—Stokely-Van Camp Corp. warehouse damaged.

San Fernando, Cal.—Citrus packing plant of Hazeltine-Blue Goose Packing Co. destroyed.

Wilmington, Cal.—Cotton storage shed near Berth 145, Los Angeles Harbor, damaged. Cotton owned by six major California cotton shippers and was to be sent to Japan on consignment.

Olathe, Colo.—Warehouse of Olathe Potato Growers Cooperative Assn., damaged.

Norwich, Conn.—Recreation building of SS. Peter and Paul Church destroyed.

Stamford, Conn.—Two-thirds of Burdick Junior High School, destroyed.

Thompson, Conn.—Thompson Hill Manor, a hotel and restaurant, destroyed.

Wallingford, Conn.—A. Boucher & Sons cabinet making firm and stock of kitchen cabinets, damaged.

Watertown, Conn.—Barn owned by Mrs. Stanley Kontout and First National store, damaged.

Newcastle, Dela.—Delaware Luggage Co. building, Deemer's Beach, destroyed.

Deland, Fla.—The Commons, only campus eating place at Stetson University, damaged.

Plant City, Fla.—Southland Frozen Food Co.'s plant, damaged.

Atlanta, Ga.—Sutherland Produce Co. plant damaged. Air compressor.

Blackfoot, Ida.—Kuglers Jewelry Store, Longhurst Photographers and Chuck Wagon Cafe, damaged.

Bonners Ferry, Ida.—Kelson Lumber Co. destroyed.

Mullan, Ida.—Beans grocery store damaged.

Bloomington, Ill.—Morris-Tick block-long junk company destroyed.

Carlinville, Ill.—C. & P. Auto Supply store, Self Service Laundry, Busy Bee Bakery and Masonic hall, damaged. Defective wire.

Chicago, Ill.—Reilly Tar & Chemical Corp. warehouse destroyed.

Chicago, Ill.—Lippman Lumber & Supply Co. and Home Bros. Furniture Co. factory, damaged.

Chicago, Ill.—Marvin Envelope & Paper Co. plant destroyed.

Chicago, Ill.—Ruprecht & Co., wholesale meat plant, damaged.

Chicago, Ill.—Interstate Furniture Co. store destroyed.

Dixon, Ill.—Building housing Henry Pratt Co.,

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UNOX alone, makes wet water that is unsurpassed

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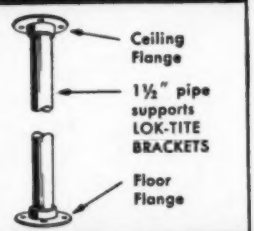
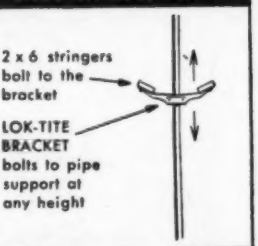
Lok-Tite brackets help solve hose storage problems by providing ample ventilation and easy access for fittings inspection in limited space. Build your storage racks with new or used materials.

FEATURES

SIMPLE INSTALLATION



EASY ADJUSTMENT



Lok-Tite Brackets won't slip under any load the pipe and stringers are able to support.

Lok-Tite brackets, light weight aluminum alloy, designed for strength and easy installation.

Each $3.65 F.O.B. Wichita

W-B MANUFACTURING COMPANY

157 NORTH WACO STREET WICHITA, KANSAS

manufacturers of machine and drilling tools used in pipeline work, and John Kavanaugh Co., producers of plastic novelties, destroyed.

Lewistown, Ill.—Spoon River Hotel in business district damaged.

Livingston, Ill.—Tipple and coal screening plant at Livingston Mt. Olive Coal Co. mine, destroyed.

Peoria, Ill.—Ben Schwartz Food Mart, destroyed.

Peoria, Ill.—Caldwell Acres, restaurant and tavern on Farmington Road near Kickapoo Creek, destroyed. Charge of dynamite.

Columbus, Ind.—Walesboro School damaged. Sparks from a heating stove.

Elkhart, Ind.—Wambaugh Garage and Appliance Store, damaged.

Indianapolis, Ind.—Building occupied by Ace Loans Co., damaged.

Indianapolis, Ind.—Stanley Apartments, damaged. Lighted cigarette.

Shelbyville, Ind.—Cahn-Smith Department Store, damaged.

Terre Haute, Ind.—Building occupied by Central Furniture Store and Ace Washer-Sweeper Service Co., damaged.

Trafalgar, Ind.—Warehouse of Kenneth H. Rider Canning Co. destroyed.

Rockwell City, Iowa—Fullerton Lumber Co. destroyed. Defective wiring.

Sioux City, Iowa—Building known as Morningside Masonic Lodge Building, housing Mosler Sales & Service Co. and furniture and appliance store, destroyed.

Riverdale, Kans.—Filling station owned by Donald L. Wilson, destroyed. Gasoline from a broken tank pipe exploded.

Cynthiana, Ky.—Farm home on Herbert Moore farm, destroyed.

Louisville, Ky.—Plant of Variety Millwork Co. destroyed.

St. Matthews, Ky.—Former auto sales and service building, owned by Summers Herrmann Co., Louisville Ford dealers, and leased out to several firms, damaged.

Bangor, Maine—Bangor House damaged.

Rockland, Maine—Building of Glover Bros., housing W. H. Glover Co. hardware and lumber store, and Nichols barber shop, damaged. Rockland Courier-Gazette, tri-weekly newspaper in Spear Block, damaged. Rockland-Rockport Lime Co. also damaged.

Baltimore, Md.—Dredge Defender and tug Sam Keller destroyed; tug A. C. Laun and pilot boat heavily damaged.

Bethesda, Md.—Woodward & Lothrop department store, destroyed.

Cambridge, Md.—Oakley Beach Hotel destroyed.

Tuxedo, Md.—Warehouse of Lane Lumber Co. destroyed.

Malden, Mass.—Community Chevrolet, Inc., damaged.

Orange, Mass.—Mann's Block occupied by Town Hardware store, Jackson drug store, Orange Clothing Co., Wood's Beauty Shop, Orange Co-Operative Bank, law offices of William T. Woodrow and Delbert A. Witty, insurance office of J. D. Kimball and Orange District Court, destroyed.

Addison, Mich.—Concrete block plant of Addison Heat Treating Co., destroyed.

Cadillac, Mich.—Montgomery Ward & Co. retail store, insurance agency and barber shop in adjacent building, destroyed.

Cassopolis, Mich.—Old Reames and Norton Church, three miles south on Highway M-62, being converted into residence, destroyed. Defective oil burner.

Cheboygan, Mich.—Knights of Columbus building partly destroyed.

Detroit, Mich.—Singing Sam's Restaurant and Jackson Products Co. destroyed.

Dowagiac, Mich.—Consolidated Die Casting Corp. of America plant destroyed. Explosion.

Evart, Mich.—Keehn's Coffee Shop destroyed; adjacent Fleming's shoe store heavily damaged. Natural gas explosion from leaking main under coffee shop.

Flint, Mich.—West Side Auto Parts and Repair and West Side Service Station, damaged.

Flint, Mich.—Skaff Rug Co. warehouse destroyed. Defective space heater.

Imlay City, Mich.—Dean's Drug Store destroyed.

Iron River, Mich.—St. Agnes Catholic Church destroyed.

Kent City, Mich.—Section of Kent City High School destroyed.

Cambria, Minn.—Federated Church of Cambria destroyed.

Benoit, Miss.—Benoit Elementary School destroyed.

Biloxi, Miss.—The Colony Restaurant and Lounge, destroyed.

Kansas City, Mo.—Warehouse of James H. Stanton Construction Co. destroyed.

Kansas City, Mo.—Milgram Food Store damaged.

St. Louis, Mo.—Melene Recreation Parlor and Bowling Alleys and Melcher-Schene Hardware & Lumber Co. store, destroyed. Short circuit.

Havre, Mont.—Fred Boss farm market destroyed.

Atlantic Highlands, N. J.—Casino Restaurant on Ocean Boulevard, destroyed.

East Orange, N. J.—East Orange High School damaged.

Englewood, N. J.—Auditorium, cafeteria and locker room of St. Cecilia's High School, destroyed.

Newark, N. J.—Chemical plant warehouse and shipping room at Malmstrom Chemical Co., destroyed.

Passaic, N. J.—Hobby Footwear Co., slipper manufacturers, damaged.

Trenton, N. J.—The Cadillac Bar, a night spot, destroyed.

Union City, N. J.—Standard Coat & Dress Co. damaged.

Dulce, N. M.—Community center, recreation hall and Reformed Church of America Mission, destroyed.

Portales, N. M.—Grain elevator owned by M. C. Roberts, destroyed.

Astoria, N. Y.—Women's wear store and apartment destroyed; two adjoining buildings, damaged.

Binghamton, N. Y.—Ackerman building occupied by Western Union's traffic department, restaurant, jewelry store and offices, destroyed.

Hamburg, N. Y.—State Highway Department's paint shop, destroyed.

Johnson City, N. Y.—Apartment and store building in business district including Ben's Clothing shop and florist shop, owned by Clairmont G. Reinhart, destroyed.

Lattingtown, N. Y.—Mansion, the hub of Gold Coast Society life two decades ago, belonging to Louis J. Horowitz, destroyed.

Malone, N. Y.—Two buildings at Bowen Lumber Co. near New York Central tracks, destroyed.

New York, N. Y.—Record Collectors Shop destroyed.

Niagara Falls, N. Y.—Levy Bros. furniture warehouse damaged.

Norwich, N. Y.—Dairy barn and two silos of Leon Wales, destroyed.

Rhinebeck, N. Y.—Rhinebeck Recreation Center, a bowling alley opposite the Dutchess County Fair Grounds, destroyed.

Sodus Point, N. Y.—Deville Hotel destroyed.

South Jamesport, N. Y.—Boat storage building on the shore of Peconic Bay, housing boats belonging to summer residents, damaged.

Elon College, N. C.—A hay-filled building at Carolina Biological Supply Co., destroyed.

Fair Bluff, N. C.—Warehouse owned by Ellis Meares & Sons Co., filled with furniture, farm and building supplies and tools, destroyed.

Hudson, N. C.—Three buildings, at 614-616, 610 and 612 Warren Street, damaged by fire. Three buildings at 620, 620½ and 610 Warren Street damaged by smoke and water. All were three-

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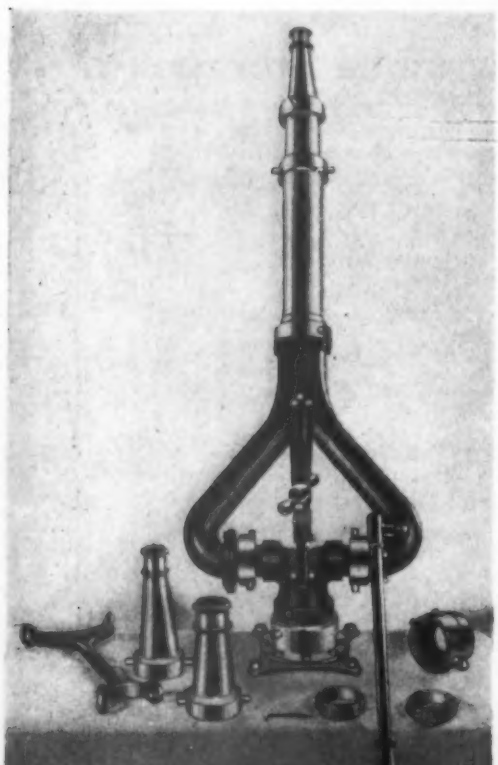
MODEL 10

A LOW PRICED TURRET WITH UNLIMITED APPLICATION



YOU can mount these guns on an old pumper, trailer or pick-up wagon. One man can operate three guns. Full circle operation—easily, by handle, and can be locked and left alone in any position. Designed for firetrucks, buildings, lumber yards, etc.

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COMES complete with 1¼, 1½, 1¾ tips, reducer, hose coupling, and base for 2½" standpipe. It's about half the size of our big gun—but throws amazingly effective streams.

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story brick and frame structures. One of occupants was Sunkist Food Market.
Lexington, N. C.—Repair shop, paint shop and parts department of Grubb Motor Lines, Inc., destroyed. Paint fumes caught fire.
Love Grove, N. C.—Main factory building of Southern Box & Lumber Co., destroyed.
Robbins, N. C.—Swain's variety store and barber shop destroyed.
Sanford, N. C.—Simmons apartments and office building, destroyed.
Shelby, N. C.—Elizabeth Baptist Church, destroyed.
Tabor City, N. C.—Old Tabor City School destroyed; elementary school library, destroyed.
Warrenton, N. C.—Carolina Lumber Products Co. destroyed.
Wrightsville Beach, N. C.—Ocean Terrace Hotel destroyed.
Canton, Ohio—Plaza Shopping Center occupied by Charmer House, a woman's apparel store, and adjoining women's store and two other businesses, damaged.
Cincinnati, Ohio—Cincinnati Sanitarium destroyed. Smoking in bed.
Columbus, Ohio—Building occupied by Hilltop Jewelry Shop and apartments upstairs, damaged.
Crestline, Ohio—Western Auto Association Store and adjoining buildings, which include a jewelry store and a bank, damaged.
Dayton, Ohio—Rike-Kumler Co., Dayton's largest department store in downtown section, damaged. Faulty wiring.
Massillon, Ohio—Massillon Auto Parts Co. garage, destroyed.
Worthington, Ohio—Twenty-one room dwelling occupied by Neil Training School for Retarded Children, destroyed.
Frederick, Okla.—No. 2 shed of Traders' Compress, destroyed.
Gresham, Ore.—Rowary Cutbox Co. destroyed.
Hood River, Ore.—Odell Fire Station, trucks and contents, destroyed.
Medford, Ore.—Pinnacle Packing Co.'s plant destroyed.
Portland, Ore.—Northwest Copper Fabrication plant destroyed. Arson.
Boyertown, Pa.—Lumber yard-planing mill and coal yard, spread to nearby eight dwellings and lodge hall of Boyertown Chapter of Fraternal Order of Orioles, destroyed.
Harrisburg, Pa.—I. G. Greenberg's clothing store, damaged.
Malvern, Pa.—St. Joseph's Hall at St. Joseph's in the Hills, destroyed.
Saxton, Pa.—Coal tipple at nearby Lumsted Coal Co. damaged.
State College, Pa.—Three-story main building of O. W. Houts Department Store and its two two-story annexes, destroyed. An adjacent lumber yard was damaged.
West Warwick, R. I.—Christ the King Roman Catholic Church, Centerville section, damaged.
Greenville, S. C.—Double Cola Bottling Co. heavily damaged. Defective wiring.
Lake City, S. C.—Lake City Furniture Co. destroyed.
Landrum, S. C.—Landrum Hosiery Mill destroyed.
Seneca, S. D.—Charron store and cream station in Faulk County community, destroyed; Duncan cafe and pool room, damaged.
Chattanooga, Tenn.—Warehouse and office, occupied by Chattanooga River Terminal, destroyed.
Nashville, Tenn.—Mitchell's Cafeteria, destroyed. Defective wiring.
Amarillo, Tex.—Capitol Theatre destroyed.
Dallas, Tex.—Wing and contents of St. Cecilia's Elementary School, destroyed.
Gainesville, Tex.—Gainesville Community Circus, damaged. Elephants kicked or blew straw onto a gas heater.
Richfield, Utah—Will's Tire Service destroyed.
Martinsville, Va.—Lester Bros. Supply Co.'s warehouse destroyed. Overturned oil stove.
Occoquan, Va.—Apartment building damaged.
Richmond, Va.—Virginia Air National Guard hangar and a B-26 bomber at Byrd Field, destroyed.
Aberdeen, Wash.—Pioneer Florists Greenhouses nursery, destroyed.
Colville, Wash.—Printing plant at Weekly Colville Statesman Examiner, destroyed.
Des Moines, Wash.—Covenant Beach Tabernacle contents destroyed.
Ellenburg, Wash.—White Delaney feed mills of Fisher Flouring Mills, damaged.
Kennewick, Wash.—Don Cole service station destroyed. Explosion.
Plaza, Wash.—Hammonds restaurant and service station, destroyed.
Pullman, Wash.—Walter Getchell Lockers Grocery destroyed. Faulty furnace.
Richland, Wash.—Up-Town Thrifty Drug Store and postal sub-station, destroyed. Defective wiring.
Tacoma, Wash.—Murphy Campbell Tracer Co. destroyed; H. & L. Poultry Plant, destroyed.
Vancouver, Wash.—Orchards Cafe destroyed.
Yakima, Wash.—Cowiche High School destroyed.
Yakima, Wash.—Snipes Gun Recreation Lodge destroyed. Defective wiring.
Bayside, Wis.—Restaurant at Saxony on Lake Michigan, destroyed.
Mauston, Wis.—Grain elevator destroyed. Defective heating plant.

A New Concept In Body Design
For Industrials And Utilities Service

H&H

THIS is one of several similar units built for one of the country's largest utilities. It is a "triple-threat" job—dry chemical (2000 lbs.) water (500 gals.) foam (50 gals.). Equipped with 500 GPM pump at 150 p.s.i.—with two booster reels carrying 150 ft. each of 1" hose. Body carries 1000 ft. of 2½" d.j. fire hose. Adequate compartments for a portable pump, generator—50 gals. wet water—50 gals. foam. Forward deck of body can be utilized to support flood lights. This body can be furnished for any chassis you select.

See us first for special bodywork . . . tournament rigs . . . rescue trucks, etc.

H & H FIRE APPARATUS CO., 725 TONNELE AVE., JERSEY CITY, N. J.

SIRO-BLASTER

STARTLING NEW
WARNING DEVICE

Powerful Siren plus contrasting Blaster in controllable sound patterns gives DOUBLED PROTECTION to men and equipment.

• • • •

Send for new Catalog

THE SIRENO CO., INC. Dept. No. 27, 214 William St., New York 38

Rice Lake, Wis.—Office and machine shop of Pioneer Sand & Gravel Co. and Edward Sprague, contractor, destroyed. Spontaneous ignition.
Big Piney, Wyo.—Griggs Power & Light Co. power plant and adjoining warehouse, damaged.
Cheyenne, Wyo.—Interior of building housing Skaggs Drug Store, destroyed.
Calgary, Alta.—Civilian aircraft hangar and 25 single and twin-engine planes at Calgary's Municipal Airport, destroyed.
Winnipeg, Man.—Hub Clothing store and Public Drug store on Main Street; Mrs. Burke's hairdressing shop on Rupert Avenue, heavily damaged.
Bradford, Ont.—Vegetable storehouse destroyed.
Etobicoke, Ont.—Building occupied by bowling alley and bank, damaged.
Hamilton, Ont.—Canadian Comstock Co. warehouse on Ontario Hydro property, destroyed.
Kingston, Ont.—Drill hall and quanity of ammunition in Royal Canadian Electrical and Mechanical Engineers' School, destroyed.
Smiths Falls, Ont.—Three apartments on main business street, destroyed.
Toronto, Ont.—Building housing Ideal Stoker Co. and Federal Mogul Service, an auto accessories firm, destroyed.
Toronto, Ont.—Factory building occupied by seven businesses, spreading to Avenue building housing 11 companies, destroyed.
Toronto, Ont.—Factory and warehouse of National Upholstering Co., damaged. Sparks from motor.
Toronto, Ont.—Misken Bros. plumbing and heating firm and Cynia Blouse Co., destroyed.
Montreal, Que.—Irving Ski Clothing Ltd., factory damaged.

Fuel Extinguishment Research

(*Continued from page* 38)

(9) Walter self-locking differential, 4-wheel drive, tire size 16 x 25,
(10) six man enclosed, winterized cab,
(11) fully winterized, and
(12) gross weight approximately 32,000 lbs.

The second item is a winterized water trailer of 400 gallon capacity which is provided with two electric motor driven, 50 gpm pumps powered by organic tactical unit power. This unit is designed to meet the requirements of field operations, and in addition to providing water for fire fighting, carries manually operated shower heads for personnel decontamination in the event of accidental exposure of personnel or requirement after acid spills for washing off protective clothing prior to removal. Water without a basic chemical additive will be used in the water trailer pursuant to the recommendation of the Surgeon General.

The third item is a portable shower unit of 100 gallon water capacity. This unit is nitrogen gas pressurized and is provided with heating torches for use in sub-freezing weather. It is designed to provide emergency personnel inerting in field propellant storage facilities where water and electric power may not be available.

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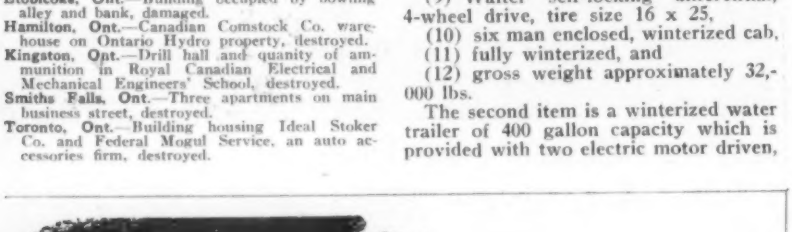
To the Glorious Dead

Within the vestibule of London Fire Brigade headquarters a £1,500 memorial is to be erected to the 414 men and women fire fighters in the 5th (London) Region who were killed in the course of duty in the 1939-45 war.

From "FIRE"


No lubrication necessary
Carbon bearings (oilless)
Bronze spur gears (Oberdorfer alloy No. 16438)
No. 26 Pump
Piston-finished stainless steel shafts
Bronze housing (Oberdorfer alloy No. 741)

the new
OBERDORFER
BRONZE BOOSTER PUMPS

These booster pumps with oilless bearings will last 3 to 5 times longer than the old style equipped with plain bronze bearings. As a result of closer machining tolerances, over 20 feet of suction lift may be depended on.

The No. 13 and No. 26 Oberdorfer Pumps are more fool-proof than they have ever been. When you get to a fire you have something you can count on. It isn't necessary to wear pumps out checking them periodically to see if they will work. These pumps are metering pumps in principle and therefore must produce the same volume for every revolution of the drive shaft.

PERFORMANCE DATA—No. 26 and No. 13 PUMPS

Pump No.	Pump Shaft R.P.M.	Pounds Pressure	Hose Length and Size	Dry Suction Lift in Feet	Vol. in Gal. Per Minute
26	1600	120	500'—1½"	20'	150
13	1600	120	500'—1½"	20'	75

FIRE PUMP DIVISION, Oberdorfer Foundries, Inc., Syracuse, N. Y.

"Gilding the (Water) Lily"

Portland, Ore., it may be recalled, is the place where they line the streets with roses; where beauty reigns and where it rains beauty.

In Portland, George Smith, proprietor of a beauty salon (Portland's full of 'em) is one of those Portlanders who believes in practicing what he sells—beauty. For this reason the common plebian "fire plug" in front of his beauty parlor offended his sensitivities no end every time he glimpsed it.

And so he decided to do something about it, to try to improve its decor, if naught else. And he did.

Last November, Smith officiated at an official unveiling of the fruits of his genius; the conversion of the homely plug to a thing of beauty (and incidentally focused some attention on his new beauty emporium).

Today, Portland has the only chrome-plated fire hydrant in active duty in the world. Officials admit it; boast about it, in fact. And backing them up are Mayor Fred L. Peterson; Commissioner Stanley Earl of the Fire Bureau and Fire Chief Edward Grenfell.

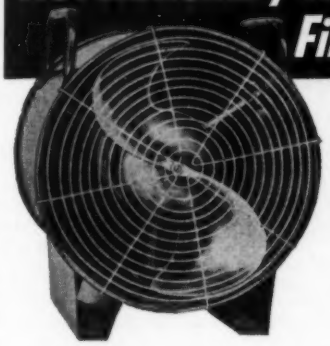
Somewhere down the line should go a modicum of orchids to those gentry in the hydrant division who wrestled with George Smith's wild idea and gave it being: At best it was a disheartening project. It's a hydrant that extends to a depth of six feet and has to be taken out in one piece. The one at Smith's corner was one of two of this type among the 7,200 hydrants in the city. With any one of the other 7,198 hydrants, chroming would have been a relative cinch.

But Smith was undaunted. Admiring his chrome-plated sticktoitiveness the Fire Bureau said "go ahead." So Smith hired men to dig up the street, the sidewalk and the plug. They carted it away to the California plating works, where it got the large economy size treatment: chroming, polishing, buffing and more polishing, before it acquired that certain mirror finish.

When it was completely beautified, and back in its select place in the sidewalk, Smith found it satisfactory. After all, who else has a chrome-beautified fire hydrant?

The latest in hydrant beautification: chrome plating.

Revolutionary New Principle Increases Fire-Fighting Efficiency!



● The Super Vacuum Smoke ejector is a powerful portable fan unit designed especially for fire departments. This design is a new and revolutionary principle in moving air. Several thousand Super Vacuum Smoke ejectors are in use throughout the United States and Canada. Controlled ventilation is new and very necessary in fire fighting. Years of service and satisfied users are your best guarantee for any merchandise.

THE HEART OF THE SUPER VACUUM

● The secret of Super Vacuum is the patented fan blade. Conventional fans chop the air and push it back. Whereas the Super Vacuum fan blade is a perfect spiral air screw which creates a partial vacuum, suction is created over the entire face of the blade and the air or smoke is discharged in a high velocity spiral. There are no dead spots—that is why Super Vacuum outperforms other fans twice its size.

Write for Additional Information or Contact Your Local Fire Equipment Dealer

MANUFACTURED EXCLUSIVELY BY

Super Vacuum MANUFACTURING CO.

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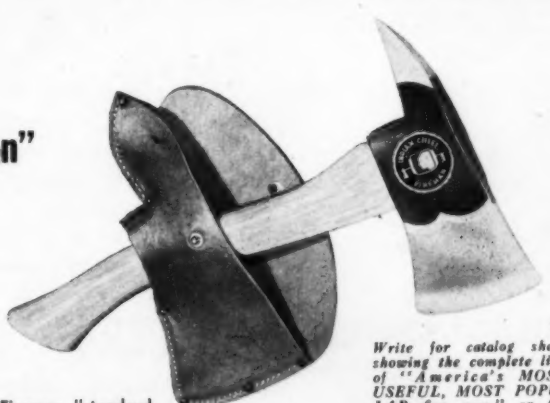
"Safety First" ... and FAST!

MANN'S

"Little Fireman"



You'll make your Little Fireman "standard equipment" for fire fighting. Leather-sheathed for safety, you can strap it on for instant readiness. 1½ lbs. of precision-balanced help when you're in close quarters where every second counts. Full polished head is finished in Indian Chief Red with gold trim; finest quality 15-inch white hickory handle. A precision tool in the highest MANN tradition of fifth-generation craftsmanship.

Write for catalog sheet showing the complete line of "America's MOST USEFUL, MOST POPULAR fire axes," or for the name of your nearest MANN AXE dealer. Address Dept. 554.

MANN EDGE TOOL CO., Lewistown, Pa.

. . . making America's finest quality axes since 1843

ARMY OF N. Y. VOLUNTEERS FIGHTS HUGE BARN FIRE

An Estimated 1,000 Volunteer Firemen and Military Fire Fighters Operate on Stubborn Blaze

WHAT may well be a record for rural farm fire attack was chalked up in September, when a small army of volunteer fire fighters, including national guardsmen, struggled for seven hours to save a large barn on the farm of Levi J. Gracey on Pearl street, five miles outside Watertown, N. Y.

Coordinated efforts of an estimated 1,000 fire fighters, working in shifts, averted total destruction of the modern 70 x 250-foot metal-roofed structure, one of the largest in the north country, holding over 500 tons of hay and other material. An estimated 130 pieces of fire fighting equipment were operated by 32 fire departments assisting in the cooperative fight. Fifty-five persons injured, none seriously, and five others were hospitalized when overcome by smoke, battling the blaze which started at 1:00 P.M. on a Saturday and lasted over the weekend.

The fire apparently broke out in the barn shortly after workmen engaged in blowing straw into the building had gone to dinner. It is believed a stone might have gone through the blower machinery touching off a spark which ignited the hay.

Passing motorists first noticed the smoke and notified the sheriff's office, which called the Black River Fire Department. On the scene within 15 minutes, the volunteers, appreciating the fight ahead of them, called for help from every nearby fire department with a tank truck, through Fred O'Brien, Black River deputy fire coordinator for the county.

Within an hour nine fire departments had joined forces to fight the blaze which swept through the north side of the barn, crammed with hay. The volunteers removed machinery from the building and made certain no livestock was within the burning structure.

As the struggle continued, additional forces were summoned through the County's mutual aid system. Departments which sent men and equipment included Black River, Deferiet, Brownville, Dexter, Great Bend, Town of Watertown, Evans Mills, Felts Mills, Calcium, City of Watertown, Philadelphia, Antwerp, Town of Theresa, Plessis, Alexandria Bay, Adams Center, Adams, Belleville, Camp Drum, Glen Park, Clayton, LaFargeville, Depauville, Three Mile Bay, Henderson, Smithville, Gouverneur, Natural Bridge, Mannsville, Sackets Harbor, Fishers Landing and Carthage.

Charles W. Hayes, Jefferson County Fire Coordinator, said the mutual aid operation was the largest in a rural area ever undertaken in the State. He paid particular praise to some 500 National Guardsmen from Camp Drum, who arrived with tank trucks, and joined the combat. Actually some of the soldiers, a group of five of the 990th Transportation Highway Co. of the 94th Infantry Division from Camp Drum were first on the scene. They were maneuvering in the area and they rescued ten heifers in the barn. Joined by their fellows, the guardsmen put into operation a tank truck relay system, shuttling water from a City of Watertown hydrant. A mile-long pumper relay system also was operated to take water from a creek.

Firemen attacked the blaze from all sides. Fog nozzles were inserted through holes chopped in the tin roof and walls. Water was thrown on the fire from a line taken up an aerial ladder. An army wrecker was used to pull off siding and portions of the metal roof to enable firemen to get at the stubborn blaze.

By 5:00 P.M., Saturday, fire fighters had advanced their attack into the hay loft, focal point of the fire, and three hours later they called the fire under control. However, anticipating long hours of overhauling during the night, they ringed the barn with floodlights supplied by the Clayton, Alexandria Bay, Smithville, town of Watertown, Gouverneur, Camp Drum and Brownville Fire Departments. Lights were

Speed of a welterweight, punch of a heavy —

THE CHALLENGER DeLUXE

is a fighter — a Fire Fighter

Here is a new concept in fire fighting . . . the Challenger . . . apparatus that gets there fast and delivers a knockout punch. It carries its own water supply and can get into action pronto. The Sharpsville Challenger is the only quality fire apparatus built to your own needs. It has years of experience behind it in engineering, construction and knowledge of what a fire department needs.

You should see this Oklahoma job . . . it is a Challenger Deluxe, and a dandy. Any chief would be proud to have it. Write for new bulletin CL, describing the Sharpsville Challenger Deluxe.

Sharpsville
STEEL FABRICATORS, Inc.
Sharpsville, Pa.
Established 1910 Incorporated

Builders of Service, Crash & Ladder Trucks • Volume & High Pressure Pumpers • Squad & Emergency Cars • Storage Tanks

also set inside the barn to facilitate operations.

It took an army of men from 8:00 P.M. Saturday until midnight Sunday, 28 consecutive hours, to remove the baled and chopped hay from within the building. This was the only way possible to make certain of complete extinguishment.

A truck relay system was set up in "operation hay lift" with the hay being dumped into the fields a safe distance from the barn. The Town of Leraysville sent a power shovel with a hay hook to aid in the removal task. Firemen remained on the scene until early Monday morning to guard against rekindle.

Destroyed in the blaze were the roof and its supports. About 90 per cent of the hay tonnage is not considered salvageable for cattle feed, but could be diverted to fertilizer.

Ambulances were on the scene from Deferiet, Great Bend, Smithville, Evans Mills, Natural Bridge and Brownville. A woman nurse came with the Brownville unit and remained on the job through Saturday night. In the emergency field hospitals, set up on the grounds (in which the boys from Camp Drum assisted) six inhalators and six resuscitators were available, and were used almost constantly to treat men affected by the smoke.

Twenty ladies auxiliary units in the county supplied food and coffee to the fire fighters. Food was also flown to the scene by Fire Chief Richard Hughes, Mannsville, who landed his light plane near the Gracey farm, Sunday morning.

The barn, built in 1950, with an addition constructed in 1952, suffered estimated $20,000 damage with $5,000 loss on contents.

It is reported that nearly 4,000,000 gallons of water were poured into the burning structure. In addition to the 67 tank truck units from Camp Drum, the City of Watertown sent a 1,500 gallon street flusher and two milk tankers, each with 3,000 gallons capacity which hauled water to the scene.

Ten fire department pumpers and 15 other portable pumps were used to empty the water from the fleet of tankers. Six pumpers were used in the relay system to draw water from the creek.

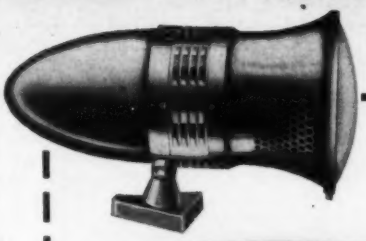
During operations, state police, deputy sheriffs and fifteen military police assembled a traffic control network, sealing off Pearl street highway and road intersections. Fire, police and Veterans of Foreign Wars also aided to assure passage of fire vehicles and water carriers.

Acknowledgement: FIRE ENGINEERING *is indebted to Charles W. Hayes, Jefferson County Fire Coordinator for data upon which this report is based.*

Death by Heart Attack Held Compensable

Mrs. Amelia O'Leary of Meriden, Conn., was awarded the sum of $31,700 for the death of her husband, Assistant Fire Chief Robert M. O'Leary following a heart attack suffered while fighting a fire in Meriden on Jan. 3, 1954. Compensation Commissioner Louis G. Sachs, who made the award against the city of Meriden, ruled that Asst. Chief O'Leary died in the line of duty.

TOM MAGNER



MODEL 20 SIRENLITE for Emergency Vehicles

Siren sounds a penetrating warning, red light automatically flashes authority. Traffic opens instantly, day or night. FREE ROLLING feature.

STERLING SIRENS

- HANDSOME
- RUGGED
- RELIABLE

Built by proud craftsmen to the highest standards of precision manufacturing . . . utilizing materials of finest quality . . . Sterling Sirens give year-after-year of unsurpassed dependability and satisfaction.

MODEL M GENERAL FIRE ALARM SIREN for Volunteer Systems

Quick acceleration, power-plus . . . Model M really gets the boys out in a hurry! Used by championship companies from coast to coast. A dependable, heavy-duty siren built of the finest materials throughout.

Complete line of Siren Equipment • *Bulletin on Request*

THE STERLING SIREN FIRE ALARM CO., INC.
10 BARTLETT ST., ROCHESTER 8, N. Y.

FIRE FIGHTERS DEPEND ON

ATTWOOD HARDWARE

Fire fighting is an exacting occupation. One mistake may be the last.

Likewise, the manufacture of fire fighting trucks is a very exacting business. Every piece of equipment must be dependable to eliminate any chance of mechanical failure.

For many years Attwood has supplied over 90% of the fire equipment manufacturers with standard and special hardware and fittings.

Contact Attwood regarding the manufacture of equipment to your specifications.

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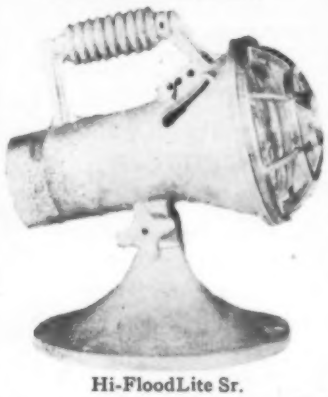
BRASS WORKS
GRAND RAPIDS 4, MICHIGAN

DARKNESS EQUALS DANGER!



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Every fireman needs enough light. Every step you take at a fire is treacherous. SEE where you're going.

Fire Companies—Add a dozen lights to your 1955 budget and give your men the protection they need.

Order from your dealer or write us for further information.

ARGUSLITE CO.
BLUE RIDGE SUMMIT, PENNA

The MEMCO AERIAL LADDER is proving to be the solution to the aerial apparatus problem in more and more of the smaller communities throughout the U.S. and Canada each and every day.

Electrically raised and lowered by power from the truck battery—it can be installed on one of your present trucks, or incorporated into a new combination by your fire truck manufacturer.

For details write

MEMCO AERIAL LADDER CO.
1007 N. W. 36th Street
Oklahoma City 3, Okla.

With Our Readers

Preventing Freezing of Front Mounts

To the Editor:

In your November, 1954, issue on page 1043, you discuss the subject "Protecting Front Mount Pumps During Frigid Weather."

We have three front-mount pumps that are not heated pumps. We find that after each fire in cold weather, after the pumps are drained, if one-half pint of anti-freeze is put in the pumps and they are allowed to run in gear for a few seconds, the cap of the pump will not freeze. This practice doesn't hurt the pump packing or the gaskets.

We have been doing this for sixteen years.

JOHN J. SCHULER
Fire Chief,
Clinton, Mich.

How a Small Town Uses Radio

To the Editor:

I have read with interest many of your articles on Fire Department Radio. Having installed radio last year, and being somewhat of a radio "bug" myself, we have noted that many of the small departments such as ours have many of the same problems in using radio to the fullest advantage, namely: how to afford a full time operator without sacrificing drivers (we are a part-paid fire department). The system we are using is very satisfactory and may be applicable to other small departments such as ours.

When we installed the radio transmitter, we also installed a system of relays which pick up signals from the Gamewell circuits and transmit them automatically to 30 receivers, which are placed in the homes of volunteer firemen, and also to our second station. We have, in addition, 20 bells in operation, hooked directly to the Gamewell fire alarm circuits.

If a fire alarm is sent by street box, the radio transmitter picks up the signals and transmits them without the aid of human hand. The three men on duty are free to leave the station and respond to the call. The same procedure is used when answering a phone call alarm. A coded wheel is set up on the transmitter in the station and kicked off by the officer in charge and all personnel are free to leave the station.

The Gamewell circuits and radio are transmitting the coded location while the trucks are on the way to the fire. We have a volunteer operator who works in a bank a short distance away. He has a radio monitor beside him at the bank and one at home. Upon transmission of an alarm he goes immediately to the station and stands by the base station transmitter.

We overcome the problem of needing a chauffeur in the chief's car by placing a carrier operated switch across the horn button. The car may be left unattended and, if the officer is needed for any emergency, the horn on the car will blow signals or automatically blow the fire call digits. This gives us perfect freedom to go about our business, with the radio standing watch. In addition to the base station transmitter, we employ three mobile units, handie-talkie and 30 monitors.

New RATCHET HYDRANT WRENCH

REQUIRES ONLY 4" SWING!

Opens any Hydrant or Gated Hydrant FASTER—EASIER in a matter of seconds.

FIREMEN PRAISE New Ratchet Principle

"It's the fastest, most convenient Wrench ever devised" —"The short 4" swing is wonderful to get into hard-to-reach places." "Your new Ratchet Wrench has been a life saver on many occasions."

Pentagon heads obtainable in following sizes—1¼"—1½"—1¾"—2", all adjustable down to one inch.

Send in your order today. Money back guarantee.

P.O. Box 921 THE S-T HYDRANT WRENCH CO. HOLYOKE, MASS.

Morning Pride

NATURAL RUBBER

DULL FINISH NATURAL RUBBER ON HEAVY NAPPED FLANNEL

TOUGH-DURABLE-VERY SOFT AND PLIABLE

Free Literature Available

See Your Local Dealer or Write
MORNING PRIDE MFG. CO.
1986 HOME AVE., DAYTON 7, OHIO

INDEX FOR 1954

The index covering the twelve issues of FIRE ENGINEERING for 1954 will be ready for distribution shortly.

It has been prepared primarily as an aid to our many readers who maintain a file of those issues. Your copy will be mailed free upon request.

A small town or city does not need a street call box system to use the automatic radio transmission. An alarm transmitter which will transmit coded alarms will do the trick.

In addition to the above set-up of our own, we being the only station in our district which employs men on a 24-hour basis, we also take calls for five outlying volunteer stations. In the event of fire, we activate their sirens by remote control radio the same as the Baltimore system explained in the October issue of FIRE ENGINEERING. We use separate phones for the outlying calls with a system of different colored lights to identify the section from which the call is coming. This eliminates the chances of error in receiving calls.

I thought a few of our ideas might be useful to someone else.

EDWIN H. PHILLIPS, Chief
Fire Department,
Beaver Falls, Pa.

Annual Reports Received

Evanston Reports on Civil Defense

Evanston, Ill., takes its civil defense seriously, if one is to judge by an excellently prepared booklet entitled "What You Should Know About Evanston Civil Defense."

The Evanston Civil Defense Corps is headed by Eddy S. Brandt, Director. Fire forces are mentioned: air raid sirens have been erected on Fire Station 1, under direction of Fire Chief Henry Dorband. Housed in this Station is one of the FCDA rescue trailers.

Fewer Fires—Losses Up in Long Beach, Calif.

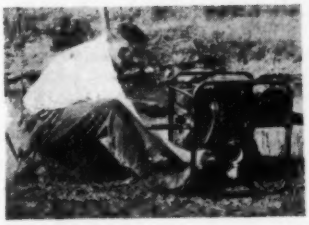
During 1953 there were 167 fewer fire calls but slightly greater loss than in the previous year, according to the Annual Report of the Fire Department. Chief Frank S. Sandeman.

All told, the department responded to a total of 5,633 calls, of which 1,914 were fire calls; 3,261 ambulance calls, and 458 other emergencies. Fire losses were $441,744, a per-capita loss of $1.55.

The Department bears down on inspections, training and public relations activities. The Department has 44 two-way mobile and 6 walkie-talkie radio units.

Most important of the recommendations made by Chief Sandeman are a new fire-alarm communications building. Two new fireboats have been added, and the Department has a continuing improvement program.

Quick-Starting Portable . . . HALE FZZ



The FZZ will supply from draft 60 GPM at 90 lbs., and 100 GPM at 60 lbs. Starts easily and quickly in all types of weather.

Firefighters are pleased with the quick-starting ability of the Hale type FZZ Portable Pumping Unit—an especially valuable feature in freezing weather. The 4-cycle single cylinder 8¼ H.P. engine ensures ease and speed in starting . . . and plenty of power to the direct-connected Hale Pump. NOTE: Discharge adapter available for 2½-inch fire hose.

Many FZZ owners use a Hale 2½" adapter for pumping through a long single 2½" line to a fire distant from source of water. They then wye at the fire end into two 1½" lines providing two capable fire streams.

Write for FZZ Folder. Let us know if your Company wants a demonstration.

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FIRE PUMP COMPANY
CONSHOHOCKEN, PA.

FIRE PUMPS IN ALL STANDARD CAPACITIES

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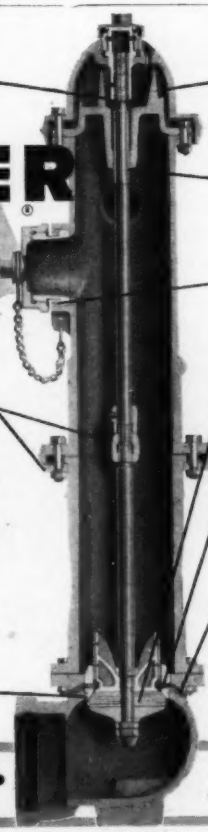

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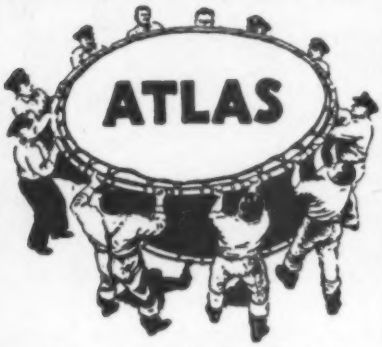

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All Patients Escape in Sanitarium Fire

A fire that might have added another tragic chapter to the long record of fatal fires in hospitals and institutions had a happier ending, thanks to fast, efficient work of the Cincinnati, Ohio, Fire Department, and the trained staff of the Cincinnati Sanitarium, private College Hill Hospital, early on the morning of Saturday, December 4, 1954.

Thirty-six patients and twenty attendants of the private sanitarium, located atop a hill, overlooking the city, marched quietly out of the burning dormitory, following the predetermined evacuation plan in which all had been trained. No patients were injured, but one attendant who was reported responsible for the cause of the fire, was burned. Three fire fighters, including a Division Marshal were hurt, none seriously.

The Sanitarium, founded in 1873, stands on a 32-acre site at 5642 Hamilton Avenue. It has six major buildings with a population of about 250. The elevation in the extreme northern part of the city is quite a distance from the street and is reached by a winding road. There are private hydrants on the grounds although, as in the case of many similar private institutions, they are insufficient for major fire operations.

The dormitory which burned was used to house patients who were permitted out of bed, many of them about ready to be discharged to their homes. The building, like others on the grounds, was three story, brick joist construction, having outside fire escapes.

The fire started in the room of an attendant on the top floor of the building and was attributed to careless smoking. The attendant, Claude Woyan, 46, who was later arrested and charged with having caused the fire, reportedly had been out drinking and upon his return, smoked in bed. About 1:30 in the morning he awoke to find his bed afire; he claimed he thought he had extinguished the blaze, and went to sleep. But at 3:13 A.M. he awoke again to find his room burning. This time he called for help and a nurse notified the hospital switchboard of the fire. The operator called the fire department and notified the staff and the hospital's rehearsed procedure went into operation.

The Fire "Tower" received a telephone notification at 3:14 A.M. This was taken by Operator Tom Rielage, and Dispatcher Pat Holz struck Box 3952 (phantom) for the Sanitarium. Responding were Engines 51, 20, 34; Ladder 5; Marshal Weron of the 4th District, and Salvage 2.

At 3:23 A.M., Marshal Weron dispatched the second alarm by radio, which brought Engines 43, 32, 21; Ladder 13; Ambulance 1; Salvage 1; Hose 43; Acting Chief of Department Leo J. Kuhn (Chief Barney Houston being on vacation); Assistant Chief Dan Vogel; Acting Assistant Chief Wm. Flamm; Marshal R. Spelman of the 3rd District, and Assistant Chief of Salvage Corps, John Frank.

At 3:30 A.M., Marshal Weron ordered the third alarm, also via radio, which set in motion Engines 13, 16, 29; Ladder 4; Hose 29; Marshal Blackburn of District 2, and Marshal J. Divine of the Arson Squad.

In the hospital, attendants quickly spread out through the lower two floors

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Fig. 156

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to arouse all the patients and get them out of the burning building. They were all successfully removed by way of inside and outside stairways and escapes. Last out was superintendent Elliott Otta and his assistant Fred Ryder, who made a check of every bed to see that no one had been overlooked. As this was being done, the fire continued to spread from its point of origin to involve the entire roof area and upper floor. Flames, visible for miles, leaped from the roof of the 60-year-old structure as fire fighters directed streams into the blaze from both inside the building, and from the exterior, using fire escapes and aerial ladders.

Because of lack of hydrants and low water pressure, it was necessary for the department to resort to relaying water from the Hamilton Avenue side, a distance of over 1500 feet. Every engine company engaged in the operation used all its available hose. At the height of the fire numerous streams were in operation. Their effectiveness was jeopardized for a time when a low pressure steam line in the attic, overheated by flames, exploded. One 30-foot section of pipe was hurled javelin-like to the ground, bouncing off a police cruiser; another section of pipe flew out, to slither along the ground, narrowly missing several firemen.

Acting Chief Kuhn, who took charge of the fire control operations, criticized the delay in notifying the fire department. He said that "the greatest sin that can be committed in an institution or a public place is not to report a fire immediately. In this case there apparently was negligence in reporting the fire and in notifying proper authorities so an alarm could be turned in." He added: "The fault is not that of the management. It is the fault of an individual, and could have resulted in disaster and great loss of life."

Chief Kuhn paid high credit to the officials of the private sanitarium staff in their disposition of patients during the emergency period. The employe who caused the blaze had his burns treated at the hospital and was then transferred to the city jail on charge of smoking in bed (punishable under Ohio law by fine and/or imprisonment).

Property loss was estimated at $300,000. This might have been much greater but for the work of the Salvage Corps, which spread over 110 covers under the fire.

Acknowledgment: Appreciation is expressed to the Cincinnati Fire Department and Dispatcher Pat Holz for details upon which this report is based.

Rescue Squad Saves Crash Victim

A Los Angeles County Fire Department rescue squad and a Whittier surgeon teamed up in December to revive a 16-year-old girl after she apparently was killed in an automobile accident.

The girl, Barbara Joan McDaniel, of Whittier, sustained head injuries in the collision at Pioneer and Whittier Blvds. in Whittier shortly after midnight on December 4.

County Rescue 40 from Pico was summoned and Firemen R. T. Haag and L. G. Hansell used the resuscitator on the girl. Still using the rescuscitator, Miss McDaniel was placed in a private ambulance and rushed to Murphy Memorial Hospital where a doctor opened her chest cavity and massaged her heart, which resumed beating. CLIFF DEKTAR

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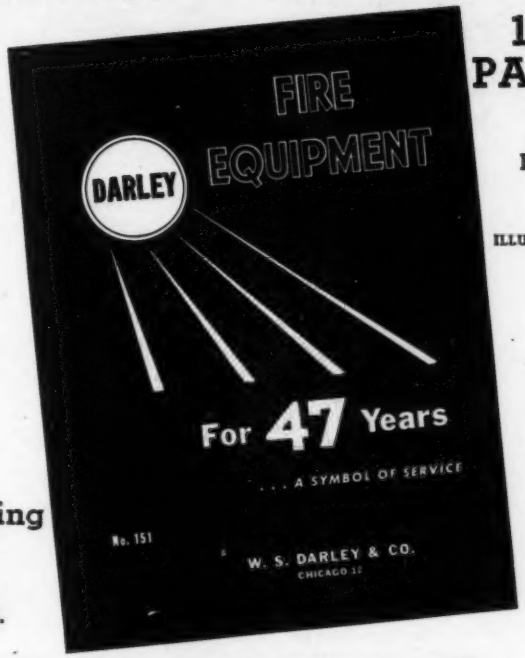

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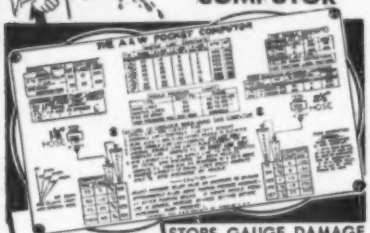

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Short Cuts and Gadgets

DATED FLASHLIGHT BATTERIES

One of the minor perplexities encountered by those who use dry cell batteries in any number is to record the date of insertion in the flashlight.

A correspondent from West Virginia suggests this: when replacing batteries in a flashlight write the date of insertion on a piece of adhesive tape and stick it to the sides of the batteries. If there is danger of the tape or writing thereon fading, cover it with scotch tape.

This date will serve as a reminder that the batteries must be replaced at regular intervals and warn you when the batteries are becoming over-age.

* * *

DRYING WET SHOES

Few persons get their feet wet more often that firemen who don't always have time, or opportunity, to get into their boots when operating at an emergency.

For the fire fighter, therefore, the problem of drying out wet footgear may be a serious one. Certainly keeping himself in footwear may be a heavy drain on his budget.

Maintenance of shoe leather is particularly troublesome in winter, which means wet shoes, even regardless of fire fighting. Wet leather becomes soft; it will then stretch out of shape, rub and scuff readily; and the stitching is apt to cut through the leather.

For those of our readers who haven't given the subject much thought, here are some recommendations. It is important to dry wet shoes carefully. If the leather becomes hot, the shoe is almost sure to be ruined. If the shoe is dried too fast at too high heat, it will shrink and become hard, tight and out of shape.

Here's the recommended procedure for drying wet shoes: First, wipe off all mud and grit with a damp cloth. Then straighten the counter, vamp, and toe, and stuff the shoe with crumpled tissue paper (many persons use crumpled newspaper). This helps to hold the shoe in shape and hastens drying. Set the shoes to dry in a place that is not too warm, and allow them to dry slowly.

Never put wet shoes near a hot stove or radiator, and don't wear them until they are thoroughly dry. It is a good plan to polish shoes once or twice as soon as they are dry. You may need to manipulate the leather with your hand to soften it after drying.

* * *

SPOTTED BY OUR ROVING REPORTER

Sign on fire alarm box 2461 at the Minneapolis-St. Paul Airport: *"A reward will be paid for arrest and conviction of any one sending in a false alarm. A false alarm may cost a human life!"*

* * *

WANTED—RECORDS!!

The Editors want your help, in solving some problems of administering fire companies and departments. The problems in question have to do with keeping fire department records.

We don't have to tell you that "paper work" is an important factor in fire department administration and operation. Nor do we have to stress the fact that there is no standard set of accounting record forms and systems used by the fire service.

Therefore, we ask you to tell us about your record keeping, and to send

Photo by Martin Taber Jr.

Stowing and Drying Turnouts in New E. Providence Station No. 4

A feature of the beautiful new Fire Station No. 4 of the East Providence, R. I., Fire Department, Chief John A. Laughlin, is this clothing rack, located in an alcove on the apparatus floor. The sturdy metal tube rack, with pinions to hold the boots, is recessed into the well lighted, completely tiled alcove, where the equipment can be dried and stowed and is readily available yet is out of the way.

FOR QUICK ACTION... POWERFUL FOG SPRAY with NEW CHAMPION

Here's a portable fog-type extinguisher for stopping fires quickly before they spread. It consists of a 5-gal. galvanized steel tank with powerful trombone slide-action pump and brass nozzle adjustable from a fog spray to stream. Can be carried as a knapsack or by its handle. 4-ft. hose attaches at top of tank, prevents water from running out when pump is below bottom of tank. Quality-built by manufacturer of dependable spraying equipment since 1915. For complete details and outstanding features of this new Champion ...

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on a set of the forms you use for the essential accounting concerning personnel; apparatus and equipment; budget and expenses; and fires and fire losses, etc.

It's quite an order, we know — but your contribution may ultimately help a lot of your fellow-firefighters (and their cooperation may just possibly develop a short-cut for YOU).

Address these: Editor "Short Cuts and Gadgets."

* * *

OUT OF ORDER TELL-TALE

In one of the first numbers of "Short Cuts" we published a description of the "McCarthy" disc, used in New York City to identify a hydrant that is out of service.

This disc, named after a popular Assistant Chief of Department at that time, consisted of a white metal collar, bearing the number of the nearest fire company to the hydrant. The collar, placed under the cap of the hydrant steamer outlet, was a warning to firemen not to use the hydrant so targeted.

Now comes a slightly different version of this same idea, used by the U. S Naval Station, Green Cove Springs, Florida.

As illustrated, this collar, instead of bearing a company number of other insignia, simply says: "OUT OF ORDER."

We're indebted to Daniel G. Aid, Chief, Fire Division, Green Cove Springs Naval Station, for this contribution.

November Fire Losses

Estimated fire losses in the United States during November amounted to $61,663,000, the National Board of Fire Underwriters has reported.

According to Lewis A. Vincent, NBFU's general manager, this $61,663,000 loss represents a decrease of 9.4 per cent from losses of $68,064,000 reported for November, 1953, and an increase of 6.9 per cent over losses of $57,668,000 for October, 1954.

Losses for the first 11 months of 1954 now total $787,103,000, a decrease of 4 per cent from the first 11 months of 1953, when they amounted to $819,960,000.

These estimated insured losses include an allowance for uninsured and unreported losses.

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Easy to install, rugged and sturdy to the extreme! Leonard pumps are guaranteed. Deliver 150 GPM at 150 pounds.

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Chief---

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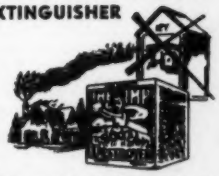

Save rushing to chimney fires—avoid slippery roofs by using IMP Chimney Fire Extinguisher. Just throw a 65c package "as is" on the hottest part of the fire in the stove, furnace or fireplace. The chimney fire will be out in jigtime without water or chemical damage. Recommended by many chiefs who carry IMP in their cars. ALSO—LIQUID IMP for *oil fired units*, is as much a fire preventative as pkg. IMP. Saves oil, money, increases heat, prevents sludge, reduces carbon deposits and is safe. You know what a fire hazard sludge is. Use LIQUID IMP in your own burners. 3½ oz. enough for 90 gals. kerosene or 55 gals. No. 2 fuel oil; 16 oz. enough for 5 times above quantity; 1 gal. enough for 1600 gals. #2 fuel.

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Fire Chief of paid and volunteer fire company would consider post of Fire Chief anywhere in United States or abroad. 34 years of age, married, 2 children. Excellent record in training men, under no pressure in present position, can give references as to ability and character. Position with industrial firm would be considered.

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575 East Milwaukee Detroit 2, Michigan

Michigan Fire Inspectors Society Formed

The Michigan Fire Inspectors Society has been formed "to give mutual assistance to fire inspectors; to further the study of fire causes and fire inspections, and also to obtain all available material in connection with fire reinspection work."

The Association sponsors the Fire Inspectors Conference of Michigan, held each fall at Michigan State College, East Lansing.

Officers of the new organization are: Charles Metz, Pontiac, president; Walter Jacombs, St. Clair Shores, vice-president; Donald E. Caswell, Muskegon, secretary-treasurer; Richard O. Burnett, Lansing, ex-officio president; and the following trustees: Michael S. Hacala, Ferndale; Ferrand Perry, Livonia; Charles C. Jones, Port Huron and Malcolm D. Whale, Lansing.

Rescue

(*Continued from page* 41)

drive 18 families, comprising 75 persons, into the street from the blazing house, and the one adjoining at 589.

Ladder 111, first to arrive, threw up its aerial to the fourth floor windows, and Firemen John O'Malley and Henry Grimm climbed up to ventilate. As they smashed windows they heard a shout from the street, "There's an old woman and a baby trapped in the rear."

The two fire fighters forced their way to the rear apartment, where heat was so intense they climbed under their rubber coats and crawled on hands and knees until they found the woman and child on a bed. The child was crying, the grandmother was unconscious.

The men pulled the child out from under the woman and then dragged her off the bed. They handed the youngster to fellow firemen who had worked their way up the steps. But because of the woman's weight, and the increasing flames and smoke, they knew they could never get down the steps with their burden.

It was no easy matter, but they managed to get her to the fourth-floor front where their ladder was waiting. They had no recourse, under the conditions, but to lash her to the ladder. Each fireman held onto her as the ladder was then retracted and she was lowered, with her rescuers, to the ground.

Once down, the woman, Mrs. Willie B. Solomon, was hurried away to a hospital suffering from third-degree burns of the legs, and smoke poisoning. The child, Michael Brantley, was in good condition. As for the two fire fighters, they went on about their business.

Operation "Firestop"

(*Continued from page* 32)

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